

AD-A156 283

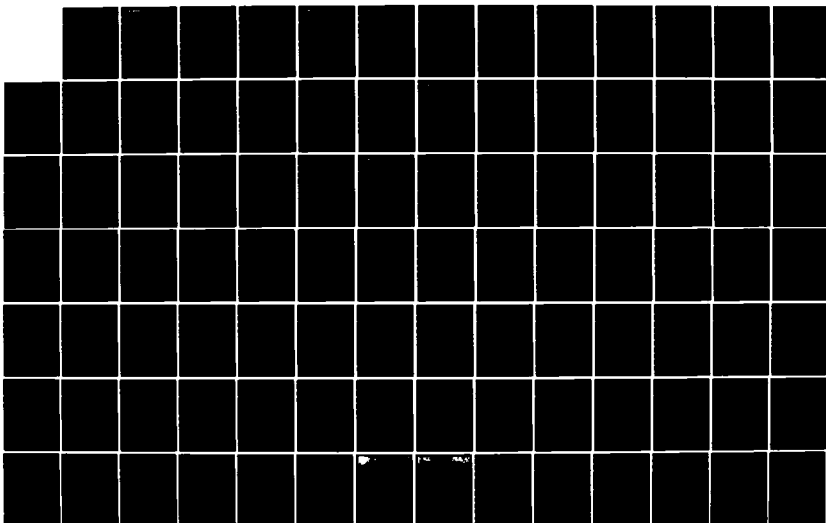
INSTALLATION RESTORATION PROGRAM PHASE II (STAGE 2-1)
VOLUME 2(U) RADIAN CORP AUSTIN TX R W BAUER MAY 85
F33615-83-D-4001

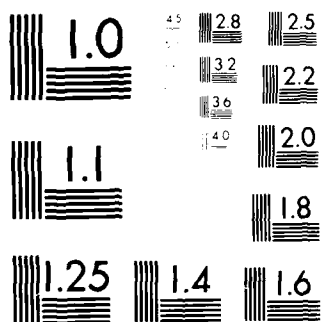
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MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

RADIAN

AD-A156 283

INSTALLATION RESTORATION PROGRAM
PHASE II (Stage 2-1)

Volume 2
Final

McClellan AFB California
Air Force Logistics Command
Headquarters Air Force Logistics Command
Wright-Patterson AFB, OH

May 1985

Prepared By:

Radian Corporation
Contract No.-F33615-83-D-4001, Order 16

USAF OEHL Monitor - Captain Robert W. Bauer
Technical Services Division (TS)

Prepared For:

United States Air Force
Occupational and Environmental Health Laboratory (OEHL)
Brooks Air Force Base, Texas 78235

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*Appendices 6, 8, 10, 11 and 13 contain no data. They are included only to maintain the numeric correlation with Phase II-Stage 2-1 task numbers for ease of cross-referencing.

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Appendix 13*	-	No Data

*Appendices 6, 8, 10, 11, and 13 contain no data. They are included only to maintain the numeric correlation with Phase II-Stage 2-1 task numbers for ease of cross-referencing.

APPENDIX 1

This appendix provides information regarding Task 1,
as discussed in text Section 3.1.

Appendix Contents

1-A Examples of Database Forms

Handwritten notes:
See 1001-1002
File 1001-1002
1001-1002

INSTALLATION RESTORATION PROGRAM
PHASE II (STAGE 2-1)
McCLELLAN AFB, CALIFORNIA

SITE SPECIFIC INFORMATION SUMMARY

GRID CELL: $\overline{\text{X}}, \overline{\text{Y}}$ (X = 01 - 19, Y = 01 - 25)COORDINATES: X = _____ (Feet East of Grid Origin)
 Y = _____ (Feet North of Grid Origin)VARIABLES: Z₁ = _____ (Source of Information)
 Z₂ = _____ (Current Use)
 Z₃ = _____ (Contamination Status)
 Z₄ = _____ (Depth to Water)
 Z₅ = _____ (Elevation of Water)
 Z₆ = _____ (Top of Screened Interval - Elevation)
 Z₇ = _____ (Bottom of Screened Interval - Elevation)
 Z₈ = _____ (Number of Screened Zones)
 Z₉ = _____ (Highest TCE Concentration [ppb])
 Z₁ = _____ (Most Recent TCE Concentration [ppb])
 Z₁₁ = _____ (Land Surface Elevation)
 Z₁₂ = _____ (Highest 1,1 DCE Concentration [ppb])
 Z₁₃ = _____ (Most Recent 1,1 DCE Concentration [ppb])
 Z₁₄ = _____ (Highest 1,2 DCA Concentration [ppb])
 Z₁₅ = _____ (Most Recent 1,2 DCA Concentration [ppb])

INFORMATION: (Summarize All Pertinent Information for This Location)

Source(s): _____
(Name, Date, or "Well Inventory")

Figure 2.B-1. Site-Specific Information Form

[] NEW

[] UPDATE

SOURCE: -----

INFORMATION TYPE: _____

[] SPECIFIC CELLS (LIST)

INFORMATION: _____

4IRP11 2-1-03

INSTALLATION RESTORATION PROGRAM

PHASE II (STAGE 2-1)

McCLELLAN AFB, CA

B I B L I O G R A P H I C I N F O R M A T I O N

AUTHOR(S): _____
1ST AUTHOR'S LAST NAME, INITIALS AND SUCCEEDING AUTHORS' INITIALS

FOLLOWED BY LAST NAME,...

PUBLICATION YEAR: ____ (E.G., 1984)

TITLE: _____

PUBLICATION: _____
JOURNAL, OR PUBLISHING HOUSE AND CITY

VOLUME, NUMBER: V. ____, No. ____ (E.G., V.30, No.12)

PAGES: _____ (FOR ARTICLES USE INCLUSIVE PAGES pp. ____-____)
(FOR TEXT USE TOTAL PAGES ____p.)

COMMENTS: _____

DATE REVIEWED: _____
DD-MM-YY

REVIEWER: ____ (INITIALS)

SOURCE: _____

MIRPII 2-1-02

APPENDIX 2

This appendix provides information regarding Task 2,
as discussed in text Section 3.2.

Appendix Contents

- 2-A Annotated Bibliography
- 2-B Methodolology for the Reduction of Information from Site-
 Specific File Sets to the Computer Database
- 2-C General Information for McClellan AFB Ground-Water Monitoring
 Wells

APPENDIX 2-A

Annotated Bibliography

RADIAN
CORPORATION

FIRST AUTHOR: Arcade Water District
PUBLICATION YEAR: 1984
TITLE: Locations, Specifications, Geologic Logs, Water Quality and Production Information for Arcade Water District Production Wells in Close Proximity to the McClellan AFB Study Area
PAGES: 25 p.
SOURCE: Walter Libal, Arcade Water District, 13 June 1984

FIRST AUTHOR: Bachmat Y. and Others
PUBLICATION YEAR: 1980
TITLE: Groundwater Management: The Use of Numerical Models, Water Resources Monograph 5
PUBLICATION: American Geophysical Union
PAGES: 178
SOURCE: Radian Library
COMMENTS: Describes numerous ground-water modeling codes

FIRST AUTHOR: Bahner, L. H.
PUBLICATION YEAR: 1984
TITLE: Memorandum to Jacob Sprouse, General Accounting Office, describing comments to the Phase II McClellan Report as developed by the staff of the USEPA Solid Waste Emergency and Remedial Response and Waste Programs Enforcement
PAGES: 3 p.
SOURCE:: Obtained from the USAF for the project proposal effort

FIRST AUTHOR: Barcelona, M. J.
OTHER AUTHORS: J. P. Gibb and R. A. Miller
PUBLICATION YEAR: 1983
TITLE: A Guide to the Selection of Materials for Monitoring Well Construction and Ground-Water Sampling
PUBLICATION: Illinois State Water Survey Contract Report 327, Champaign, IL
PAGES: 78
SOURCE: Radian Library
COMMENTS: Current, comprehensive monograph on subject

FIRST AUTHOR: Barcelona, M. J.
OTHER AUTHORS: J. A. Helfrich, E. E. Garske and J. P. Gibb
PUBLICATION YEAR: 1984
TITLE: A Laboratory Evaluation of Ground-water Sampling Mechanisms
PUBLICATION: Ground-water Monitoring Review
VOLUME, NUMBER: V. 4 No. 2
PAGES: 32-41
SOURCE: Radian Library Journal
COMMENTS: Rigorous test of reliability, bias of sampling equipment and procedures

RADIAN
CORPORATION

FIRST AUTHOR: Bayer, J. E.
PUBLICATION YEAR: 1983 MONTH: September DATE: 30
TITLE: Letter to Col. Russell HQ AFLC/SGB describing additional material on Installation Restoration Program, Phase II, McClellan AFB in response to CRWQB, Central Valley Region request
PAGES: 31 p.
SOURCE: Obtained from USAF for the project proposal effort
COMMENTS: Responses developed by Engineering-Science. Some important data, good description of drilling practices.

FIRST AUTHOR: Brunner, P. G. and
OTHER AUTHORS: J. S. Zipfel
PUBLICATION YEAR: 1981 MONTH: April DATE: 30
TITLE: Final Report for Investigating Ground-water Contamination as of 30 April 1981
PUBLICATION: USAF Technical Report
VOLUME, NUMBER: V.1 No. 1
PAGES: 300
SOURCE: Obtained from the USAF for the project proposal effort
COMMENTS: This report describes the results of pre-Phase II ground-water investigations conducted by McClellan AFB. The report describes the results of monitor well installation and sampling activities and soil sampling efforts.

FIRST AUTHOR: California Department of Water Resources
PUBLICATION YEAR: 1984
TITLE: Ground-Water Contour Maps from 1950s thru Early 1980s for the McClellan AFB Area.
PUBLICATION: Unpublished
PAGES: 10
SOURCE: Grant Ardell, California Department of Water Resources

FIRST AUTHOR: California Department of Water Resources
PUBLICATION YEAR: 1974 MONTH: July
TITLE: Evaluation of Ground-water Resources: Sacramento County
PUBLICATION: California Department of Water Resources Bulletin No. 118-3
PAGES: 141
SOURCE: John R. Feldon, California Department of Water Resources
COMMENTS: Contains hydrogeologic information for shallow and deep aquifers in Sacramento County California. The report details general water quality and aquifer characteristics for the McClellan AFB area.

RADIAN
CORPORATION

FIRST AUTHOR: California Department of Water Resources, Central Region
PUBLICATION YEAR: 1984
TITLE: California Department of Water Resources Drillers' Files
PAGES: 400
SOURCE: Grant Ardell, CDWR, Central Region, 23 May 1984
COMMENTS: This file contains construction, testing and geologic logs for off-base wells which lie within the study area. These logs are a subset of those obtained from John Tomko of the CWQCB, CVR 21 May 1984.

FIRST AUTHOR: California Department of Water Resources
PUBLICATION YEAR: August, 1978
TITLE: Evaluation of Ground-water Resources
PUBLICATION: Bulletin 118-6
PAGES: 135
COMMENTS: Report describes the hydrogeology of the Sacramento Valley. Provides general hydrogeologic information for the study area.

FIRST AUTHOR: California Department of Water Resources, Central Region
TITLE: Southwest Area Well Survey File
PAGES: 100
SOURCE: Grant Ardell, CDWR, Central Region, 23 May 1984
COMMENTS: This file contains location maps and descriptions of wells located in the southwest area survey. Some very good inventory data in this file.

FIRST AUTHOR: California Department of Water Resources
TITLE: Water Well Drillers' Reports for Off-Base Wells
PAGES: 1500
SOURCE: John Tomko, CRWQB, CVR 21 May 1984
COMMENTS: Water well drillers' reports for wells within and just outside the area of interest. According to John Tomko of CRWQB, CVR these logs were compiled February, 1984. Because of the lack of significant economic activity in the area, additional wells installed since then should be very few. File considered as back-up to California Department of Water Resources Files.

FIRST AUTHOR: California Division of Mines of Geology
PUBLICATION YEAR: 1984
TITLE: California Geology
PUBLICATION: California Division of Mines and Geology
PAGES: 209
SOURCE: Radian Library
COMMENTS: This article provides an overview of the dual-tube air rotary drilling method.

RADIAN
CORPORATION

FIRST AUTHOR: California Division of Mines and Geology
PUBLICATION YEAR: 1966
TITLE: Mineral Resources of California
PUBLICATION: California Division of Mines and Geology Bulletin 191
PAGES: 450 p.
SOURCE: Radian Library
COMMENTS: Contains a general description of the geology of the Great Valley geomorphic province boundaries.

FIRST AUTHOR: California Regional Water Quality Control Board
OTHER AUTHORS: Central Valley Region
TITLE: File Containing Water Quality Summaries for Off-Base Wells and Preliminary Summary of Analytical Findings for the Off-Base Sampling Program.
PAGES: 20 p.
SOURCE: John Tomko; CRWQB, CVR

FIRST AUTHOR: California Regional Water Quality Control Board
OTHER AUTHORS: Central Valley Region
TITLE: File of Letters to Off-Base Well Owners Describing Water Quality
PAGES: 110
SOURCE: John Tomko; CRWQB, CVR, 21 May 1984
COMMENTS: File contains letters to well owners listing analytical results and explaining meaning. Also includes recent (1984) analytical results.

FIRST AUTHOR: California Regional Water Quality Control Board
OTHER AUTHORS: Central Valley Region
TITLE: File on General Information for the Quarterly Sampling Effort (Off-Base) and 1st thru 2nd Quarter Results for NW (J-M), Central, and SW Sectors
SOURCE: John Tomko, CRWQB, CVR, 21 May 1984
COMMENTS: Analytical results and general information on quarterly sampling; NW sector, 1st quarter results (Oct-Dec 1983); central sector; 2nd quarter results (Jan-March 1984)

FIRST AUTHOR: California Regional Water Quality Control Board
OTHER AUTHORS: Central Valley Region
PUBLICATION YEAR: 1984
TITLE: McClellan AFB Off-Base Water Quality File Set 1/3 - 3/3
PAGES: 875 p.
SOURCE: John Tomko, CRWQB, CVR; 21 May 1984
COMMENTS: This file set contains analytical data for off-base sampling and analysis program through April, 1984

RADIAN
CORPORATION

FIRST AUTHOR: CH2M Hill
PUBLICATION YEAR: 1981 MONTH: July
TITLE: Installation Restoration Program Records Search for McClellan Air Force Base, California
PUBLICATION: Report to Air Force Engineering and Services Center
VOLUME, NUMBER: V. 1 No. 1
PAGES: 300
SOURCE: Obtained from the Air Force for the project proposal effort.
COMMENTS: This report presents the results of the Phase I Investigation for McClellan AFB. Former waste disposal sites are described and characterized (ranked) in this report. The environmental setting of the Base is also discussed.

FIRST AUTHOR: CH2M Hill
PUBLICATION YEAR: 1984b MONTH: March
TITLE: Installation Restoration Program Phase III/IV Area D Site Characterization Study; Technical memorandum No. 2 for McClellan Air Force Base, CA
PUBLICATION: Report to Air Force Engineering and Services Center Directorate of Environmental Planning
VOLUME, NUMBER: V. 2 No. 1
PAGES: 500
SOURCE: Received from Lt. Col. Myers, May 21, 1984 during Radian-USAF meeting
COMMENT: This report describes the results of an extensive waste/soil boring and sampling program for the characterization of Area D.

FIRST AUTHOR: CH2M Hill
PUBLICATION YEAR: 1984c MONTH: May DATE: 9
TITLE: Installation Restoration Program, Phase III/IV Site Characterization Study, Technical Memorandum No. 3, On-Base Drilling Program and Hydrogeological Evaluation of Area "D"
PUBLICATION: Report to Air Force Engineering and Services Center
PAGES: 500
SOURCE: USAF, Lt. Col. Myers, May 21, 1984
COMMENTS: This report includes discussion on the results and findings for or installation, testing and sampling of post Phase II monitoring wells in Area "D".

FIRST AUTHOR: CH2M Hill
PUBLICATION YEAR: 1984d MONTH: May
TITLE: Draft Source Control Feasibility for Area D, McClellan Air Force Base, Sacramento, California
PUBLICATION: Report to Air Force Engineering and Services Center
VOLUME, NUMBER: V.1 No. 1
PAGES: 300
SOURCE: USAF, Lt. Col. Myers, May 21, 1984
COMMENTS: This report presents the results of the Evaluation of Numerous Potential Remedial Actions for Area "D".

RADIAN
CORPORATION

FIRST AUTHOR: CH2M Hill
PUBLICATION YEAR: 1984e
TITLE: Technical Memorandum: Hydrogeologic Conditions in the Vicinity of
Area D, McClellan Air Force Base
PUBLICATION: Technical Memorandum to CES/DEEP
PAGES: 12
SOURCE: Received from Capt. Mario Ierarti, 25 May 1984 during base visit
COMMENTS: This report presents the results of a hydrogeologic analysis
for Area D. Local historical ground-water flow directions and
velocities are considered.

FIRST AUTHOR: City of Sacramento
PUBLICATION YEAR: 1984
TITLE: Construction and Location Information for City of Sacramento
Production Wells in Close Proximity to and within the McClellan
AFB Study Area
PAGES: 25 p.
SOURCE: Lee Harry, City of Sacramento
COMMENTS: This file contains location and construction information for
City of Sacramento production wells in close proximity to and
within the McClellan AFB study area.

FIRST AUTHOR: City of Sacramento
PUBLICATION YEAR: 1984
TITLE: Locations, Specifications, Geologic Logs, Water Quality and Pro-
duction Information for City of Sacramento District Production
Wells in Close Proximity to the McClellan AFB Study Area
PAGES: 20 p.
SOURCE: Duane Malme, City of Sacramento, 13 June 1984

FIRST AUTHOR: County of Sacramento, Tax Assessor's Office
TITLE: Tax Assessor's Maps of Area of Interest Near McClellan AFB
PAGES: 100
SOURCE: John Tomko, CRWQB, CVR; 21 May 1984 and Sacramento County Tax
Assessor's Office.
COMMENTS: Set of maps describing (showing) block, section and parcel
property divisions in the area of McClellan AFB.

FIRST AUTHOR: Crooks, W. H.
PUBLICATION YEAR: 1984 MONTH: August DATE: 24
TITLE: Letter to General Trevor A. Hammond from William H. Crooks
(CVRWQB,CVR) describing comments to the Phase II IRP Report for
McClellan AFB
PAGES: 13 p.
SOURCE: Obtained from the USAF for the project proposal effort

RADIAN
CORPORATION

FIRST AUTHOR: Curran, C. M.
OTHER AUTHORS: M. B. Tomson
PUBLICATION YEAR: 1983
TITLE: Leaching of Trace Organics into Water from Five Common Plastics
PUBLICATION: Ground Water Monitoring Review
VOLUME, NUMBER: V. 3 No. 3
PAGES: pp. 68-71
SOURCE: Radian Library Journal
COMMENTS: Direct laboratory determination of contaminant release from plastics used for casing and transfer tubing.

FIRST AUTHOR: Davis, S. N. and R. J. M. DeWiest
PUBLICATION YEAR: 1966
TITLE: Hydrogeology
PUBLICATION: John Wiley & Sons Inc., Inc.
PAGES: 463
SOURCE: Radian Library
COMMENTS: General Text Describing Hydrogeologic Processes and Methods of Study

FIRST AUTHOR: DEEE Surveyors
PUBLICATION YEAR: 1982 MONTH: September DATE: 2
TITLE: Ground Surface Elevations for McClellan AFB Monitor Wells (On-Base)
PUBLICATION: Letter to Paul G. Brunner from DEEE Surveyors
PAGES: 2 p.
SOURCE: Received from Capt. Mario Ierarti, 25 May 1984 during base visit.
COMMENTS: Ground surface elevations for on-base monitor wells.

FIRST AUTHOR: Dolegowski, J.
PUBLICATION YEAR: 1984 MONTH: September DATE: 11
TITLE: Personal Conversation with John Dolegowski CH2M Hill, Redding CA, September 11, 1984
SOURCE: Elevation data for Base Monitoring Wells 51 through 57. Data also provided for "roofing company wells."

FIRST AUTHOR: Durbin, T. J. & C. Berenbrock
PUBLICATION YEAR: 1984
TITLE: Three Dimensional Simulation of Free Surface Aquifers by the Finite Difference Method
PUBLICATION: USGS Water Study Paper
SOURCE: United States Geological Survey

RADIAN
CORPORATION

FIRST AUTHOR: Ellsworth, A. L.
PUBLICATION YEAR:
TITLE: Letter to Brig. General Trevor A. Hammond describing CDOHS responses
to Phase II Report, McClellan AFB
PUBLICATION: 1983 MONTH: August DATE: 17
PAGES: 1 p.
SOURCE: Obtained from USAF for the project proposal effort.

FIRST AUTHOR: Engineering-Science and USAF
PUBLICATION YEAR: 1984
TITLE: Water Level Data for Base Monitor Wells
PAGES: 50 p.
SOURCE: Lt. Col. Milo C. Myers, 12 June 1984
COMMENTS: This file was developed by the USAF and its consultant,
Engineering-Science. The file set contains records of periodic
water level measurements for on-base monitor wells at McClellan
AFB.

FIRST AUTHOR: Engineering-Science
PUBLICATION YEAR: 1983 MONTH: June
TITLE: Final Report: Installation Restoration Program Phase II - Confirma-
tion; McClellan AFB, California
PUBLICATION: Report to USAF Occupational and Environmental Health
Laboratory, Brooks AFB, Texas
VOLUME, NUMBER: V. 1 & 2
PAGES: 500
SOURCE: Obtained from the USAF for the project proposal effort
COMMENTS: Report describes the findings of the Phase 2 investigation,
including monitor well installation and sampling

FIRST AUTHOR: EPA, Environmental Monitoring Support Laboratory
PUBLICATION YEAR: 1979
TITLE: Handbook for Analytical Quality Control in Water and Wastewater
Laboratories
PUBLICATION: EPA-600/4-79-019, EMSL, Cincinnati, OH
SOURCE: Radian Library
COMMENTS: Contains detailed guidance on sampling for trace-level organics,
field quality assurance, chain-of-custody and record-keeping.

RADIAN
CORPORATION

FIRST AUTHOR: Fenn, D.
OTHER AUTHORS: E. Coccozza, J. Isbister, O. Braids, B. Yare and P. Roux
PUBLICATION YEAR: 1977
TITLE: Procedures Manual for Ground Water Monitoring at Solid Waste
Disposal Facilities
PUBLICATION: U. S. EPA, Office of Solid Waste, Manual SW-616, also cited
elsewhere as EPA/530/SW611
PAGES: 269
SOURCE: Radian Library
COMMENTS: General, step-by-step guide for designing and implementing
ground-water monitoring programs.

FIRST AUTHOR: Freeze, R.A. and
OTHER AUTHORS: J. A. Cherry
PUBLICATION YEAR: 1979
TITLE: Groundwater
PUBLICATION: Prentice-Hall, Inc., Englewood Cliffs, NJ
PAGES: 604
SOURCE: Radian Library
COMMENTS: General text on ground-water flow and chemistry. Referenced
alpha diagram of carbonate anion stabilities - page 99.

FIRST AUTHOR: Humenick, M. J.
OTHER AUTHORS: L. J. Turk and M. P. Colchin
PUBLICATION YEAR: 1978
TITLE: Sampling of Ground-water, Baseline and Monitoring Data for In-Situ
Processes
PUBLICATION: Technical Report (CRWR-157/EHE 78-01), Center for Research in
Water Resources, The University of Texas at Austin, Austin,
Texas
PAGES: 128
SOURCE: Radian Library
COMMENTS: Describes and validates methods of calibrating monitor wells by
measuring field parameters in pump discharge to determine optimum
time to pump before sampling.

FIRST AUTHOR: Ierarti, M.
PUBLICATION YEAR: 1984 MONTH: May DATE: 25
TITLE: Current Status of On-Base Production Wells
PAGES: 1 p.
SOURCE: Received from Capt. Mario Ierarti, 25 May 1984 during base visit.
COMMENTS: Information pertaining to the current operation status (active,
inactive, etc.) of the McClellan AFB production wells.

RADIAN
CORPORATION

FIRST AUTHOR: International Ground Water Modeling Center (IGWMC)
PUBLICATION: 1981
TITLE: Ground-water Models which are Documented and Available
PUBLICATION: Holcombe Research Institute, Indianapolis, Indiana
PAGES: 75
COMMENTS: Describes general features of numerous ground-water modeling codes.

FIRST AUTHOR: Kincaid, C. T. and J. R. Morrey and J. E. Rogers
PUBLICATION YEAR: 1984
TITLE: Geohydrochemical Models for Solute Migration Volume 1: Process Description and Computer Code Selection
PUBLICATION: Electric Power Research Institute, Palo Alto, California
PAGES: 200
COMMENTS: Describes numerous ground-water and geochemical modeling codes.

FIRST AUTHOR: Konikow L. F. and J. D. Bredehoeft
PUBLICATION YEAR: 1984
TITLE: Computer Model of Two-Dimensional Solute Transport and Dispersion in Ground Water
PUBLICATION: USGS Water Resource Investigations, Chapter C2, Book 7
PAGES: 90
SOURCE: Radian Library
COMMENTS: Describes the USGS-MOC ground-water modeling code and its application.

FIRST AUTHOR: Landis, T.
PUBLICATION YEAR: 1983 MONTH: July DATE: 27
TITLE: Internal CDHS Memorandum describing comments to the McClellan Phase II Report
PAGES: 16 p.
SOURCE: Obtained from the USAF for the project proposal effort.

FIRST AUTHOR: Lischeske, C. and
OTHER AUTHORS: D. Spath
PUBLICATION YEAR: 1983 MONTH: September DATE: 7
TITLE: McClellan AFB Groundwater Contamination Action Levels and MCL's
PUBLICATION: List developed by DCOHS, Sanitary Engineering Branch
SOURCE: USAF, Lt. Col. Milo G. Myers, 21 May 1984
COMMENTS: This list identifies action or maximum contaminant levels for various ground-water contaminants. Criteria for the various standards are provided.

RADIAN
CORPORATION

FIRST AUTHOR: Lischeske, Jr., C. R.
PUBLICATION YEAR: 1984 MONTH: May DATE: 21
TITLE: List of Wells Reported But Not Sampled by the California Department
of Health Services, Sanitary Engineering Branch
PUBLICATION: Technical Memorandum (unpublished)
PAGES: 1 p.
SOURCE: Carl Lischeske Jr. of California Department of Health Services

FIRST AUTHOR: Luhdorff and Scalmanini, Consulting Engineers
PUBLICATION YEAR: 1983 MONTH: December
TITLE: Base Well Sealing Report, McClellan Air Force Base, California
PUBLICATION: Preliminary Report to U. S. Air Force, McClellan Air Force Base
VOLUME, NUMBER: V1 No. 1
PAGES: 250
SOURCE: Obtained from USAF for the project proposal effort
COMMENTS: Report provides recommendations for grouting base production wells
to slow/eliminate vertical movement of contaminants.

FIRST AUTHOR: Miller, C. T. and
OTHER AUTHORS: W. J. Weber, Jr.
PUBLICATION YEAR: 1984
TITLE: Modeling Organic Contaminant Partitioning in Ground-Water Systems
PUBLICATION: Ground Water
VOLUME, NUMBER: V. 22, No. 5
PAGES: 584-592
SOURCE: Radian Library
COMMENTS: Article describes mathematical models used to predict solute
matrix interactions.

FIRST AUTHOR: Morrison, R. D.
PUBLICATION YEAR: 1983
TITLE: Ground Water Monitoring Technology
PUBLICATION: Timco Mfg., Inc., Prairie du Sac, WI
SOURCE: Radian Library
COMMENTS: Good, detailed discussions of procedures, equipment and
applications.

FIRST AUTHOR: Myers, M. G., Lt. Col.; Bioenvironmental Engineering
Services, McClellan AFB, CA
PUBLICATION YEAR: 1984
TITLE: Personal Communication with E. W. Pearce, Radian Corporation
PUBLICATION: 30 May 1984
COMMENTS: Response to letter of engineering, provided annual cost of USAF
technician for sampling effort; requesting that labor be mini-
mized in sample program design.

RADIAN
CORPORATION

FIRST AUTHOR: Nacht, S. J.
PUBLICATION YEAR: 1983
TITLE: Monitoring Sampling Protocol Considerations
PUBLICATION: Ground Water Monitoring Review
VOLUME, NUMBER: V. 3, No. 3
PAGES: 23-29
SOURCE: Radian Library Journal
COMMENTS: Review article

FIRST AUTHOR: Nordhav, Y.
PUBLICATION YEAR: 1983 MONTH: August DATE: 5
TITLE: Letter by Engineering-Science to Col. Milo G. Myers describing
additional information for the Phase II work performed for McClellan
AFB
PAGES: 2 p.
SOURCE: Obtained from USAF for the project proposal effort

FIRST AUTHOR: Norris, R. M.
OTHER AUTHORS: R. W. Webb
PUBLICATION YEAR: 1976
TITLE: Geology of California
PAGES: 363 p.
SOURCE: Radian Reference Library
COMMENTS: This text book contains physiographic, geographic, morphologic
and geologic descriptions of the Central Valley of California.
The description of the Central Valley in this book is general in
nature and provides good background information.

FIRST AUTHOR: Northridge Water District
PUBLICATION YEAR: 1984
TITLE: Locations, Specifications, Geologic Logs, Water Quality and Pro-
duction Information for Northridge Water District Production Wells
in Close Proximity to the McClellan AFB Study Area
PAGES: 15 p.
SOURCE: Warren Jung, Northridge Water District, 13 June 1984

FIRST AUTHOR: Osiensky, J. L. and G. V. Winter, R. E. Williams
PUBLICATION YEAR: 1984
TITLE: Monitoring and Mathematical Modeling of Contaminated Ground-Water
Plumes in Fluvial Environments
PAGES: 299-306
SOURCE: Radian Library
COMMENTS: Article describes transport processes in fluvial deposits.
Treats practicality of modeling contaminant movement in variable
fluvial systems.

RADIAN
CORPORATION

FIRST AUTHOR: Parsons, F.
OTHER AUTHORS: P. R. Wood and J. DeMarco
PUBLICATION YEAR: 1984 MONTH: February
TITLE: Transformations of Tetrachloroethene and Trichloroethene in Microcosms and Groundwater
PUBLICATION: American Water Well Association Journal
PAGES: 56-59
SOURCE: Capt. Mario Ierarti, USAF McClellan AFB
COMMENTS: Describes study in which tetrachloroethane was found to be bio-transformed to trichloroethene (secondary) and chloroethene, cis and trans - 1, 2 dichloroethene and dichloromethane (tertiary) in saturated porous media.

FIRST AUTHOR: Prickett, T. A., T. G. Naymik and C. G. Lonnquist
PUBLICATION YEAR: 1981
TITLE: A "Random-Walk" Solute Transport Model for Selected Ground-water Quality Evaluations.
PUBLICATION: Illinois State Water Survey, Bulletin 65
PAGES: 103
SOURCE: Radian Library
COMMENTS: Describes the TRANS ground-water modeling code and its application.

FIRST AUTHOR: Quine, R. L. CH2M Hill
PUBLICATION YEAR: 1984e
TITLE: Supplement to Draft Technical Memorandum No. 2, Site Characterization Study, Phase III/IV Area D
PAGES: 40
SOURCE: USAF Lt. Col. Milo G. Myers, 21 May 1984
COMMENTS: Chemical results and boring logs for off-base exploration borings performed 29 March 1984 through 4 April 1984

FIRST AUTHOR: Rio Linda Water District
PUBLICATION YEAR: 1984
TITLE: Locations, Specifications, Geologic Logs, Water Quality and Production Information for Rio Linda Water District Production Wells in Close Proximity to the McClellan AFB Study Area
PAGES: 20 p.
SOURCE: Mason Adams, Rio Linda Water District, 13 June 1984

FIRST AUTHOR: Sacramento County Health Department
PUBLICATION YEAR:
TITLE: McClellan AFB Water Sample Data File, A-Z 16th-26th; 1/2-2/2
PAGES: 1000 p
SOURCE: Ken Knight, Sacramento County Health Department, 21 May 1984

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CORPORATION

FIRST AUTHOR: Scalf, M. R.
OTHER AUTHORS: J. F. McNabb, W. J. Dunlap, R. L. Cosby and J. S. Fryberger
PUBLICATION YEAR: 1981
TITLE: Manual of Ground-Water Quality Sampling Procedures
PUBLICATION: National Water Well Association, Worthington OH
PAGES: 89
SOURCE: Radian Library
COMMENTS: General manual for well drilling, sample collection. Includes good elementary background.

FIRST AUTHOR: Seray, D. H.
PUBLICATION YEAR: 1983 MONTH: August DATE: 22
TITLE: Letter and memorandum of understanding between USEPA and USAF for assistance in the McClellan investigation
PUBLICATION: Letter to Brig. Gen. Trevor A. Hammond
PAGES: 9 p.
SOURCE: Obtained from USAF for the project proposal effort

FIRST AUTHOR: Shauer, W. T.
PUBLICATION YEAR: 1983 MONTH: July DATE: 28
TITLE: Letter to Brig. General Trevor A. Hammond from W. T. Shauer describing the County of Sacramento comments/responses to the McClellan AFB Phase II Study
PAGES: 2 p.
SOURCE: Obtained from USAF for the project proposal effort

FIRST AUTHOR: Stahler, J. L.
PUBLICATION YEAR: 1983 MONTH: July DATE: 28
TITLE: Letter to Brig. Gen. Trevor A. Hammond from CDHS describing comments to the Phase II Report for McClellan AFB
PAGES: 2 p.
SOURCE: Obtained from USAF for the project proposal effort

FIRST AUTHOR: Smith, C.
PUBLICATION YEAR: 1984
TITLE: Correspondence with Chuck Smith of CalTrans Marysville District
PAGES: 1 p.
SOURCE: CalTrans
COMMENTS: Letter describing the locations of CalTrans irrigation wells in the area of McClellan AFB

FIRST AUTHOR: Sutay, R. Lt. Col; Bioenvironmental Engineering Services, McClellan AFB
TITLE: Personal communications with E. W. Pearce, Radian Corporation
COMMENTS: Many personal communications regarding various project elements.

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CORPORATION

FIRST AUTHOR: Thomas Bros. Maps
PUBLICATION YEAR: 1983
TITLE: Street Atlas and Directory for Sacramento County
PUBLICATION: Thomas Bros. Maps
PAGES: 228 p.
SOURCE: Radian Library
COMMENTS: Contains detailed street maps for Sacramento County and the study area.

FIRST AUTHOR: Trescott P.
PUBLICATION YEAR: 1975
TITLE: Documentation of Finite Difference Model for Simulation of Three Dimensional Flow
PUBLICATION: United States Geological Survey Open File Report 75-438.
PAGES: 32
SOURCE: United States Geological Survey

FIRST AUTHOR: USAF
TITLE: File of Summarized Analytical Results for Off-Base Wells
PAGES: 50 p.
SOURCE: USAF, Lt. Col. Milo G. Myers, May 21, 1984
COMMENTS: Water-quality for off-base wells for sampling events prior to August, 1983.

FIRST AUTHOR: USAF
TITLE: Map of Past Waste Disposal/Storage Areas and Base Production and Monitoring Wells for McClellan AFB
PAGES: 1 plate
SOURCE: USAF, LT. Col. Myers, May 21, 1984
COMMENTS: This map illustrates the locations of past waste disposal/storage sites in addition to monitoring and production wells at McClellan AFB. These data are plotted on a 1:500 basic layout map of the installation.

FIRST AUTHOR: USAF
PUBLICATION YEAR: 1984
TITLE: Miscellaneous Off-Base Sampling Data Including Chain-of-Custody Forms, Analytical Results for Samples Collected from the Base Industrial and Domestic Waste Water Treatment Plants and Field Sampling Data
PAGES: 75 p.
SOURCE: Capt. Mario Ierarti
COMMENTS: This file contains chain-of-custody forms and field sampling data from the off-base sampling program as received by the USAF from the CRWQB, CRV. Analytical results for samples collected from the base industrial and domestic wastewater treatment plants have been included.

RADIAN
CORPORATION

FIRST AUTHOR: USAF, McClellan AFB
PUBLICATION YEAR: 1984 MONTH: May
TITLE: USAF Off-Base Well Status Map for McClellan AFB
PAGES: 1 plate
SOURCE: USAF, Lt. Col. Myers, May 21, 1984
COMMENTS: This map shows general location of off-base wells sampled under the Air Force quarterly well sampling program. Symbols are provided on the map to differentiate between wells which were last found to be contaminated and those which were found to be clean (thru the last sampling).
Note: A change in well status occur when analytical changes are noted for at least two consecutive sampling events. Several wells have changed status (to contaminated) but have not been indicated as so on the map. See analytical records.

FIRST AUTHOR: USAF
PUBLICATION YEAR: 1984
TITLE: Off-Base Well Information File
PAGES: 200 p.
SOURCE: USAF Lt. Col. Myers, 21 May 1984
COMMENTS: File contains drilling and general logs, locations (maps) and address of numerous off-base wells.

FIRST AUTHOR: USAF
PUBLICATION YEAR: 1984 MONTH: April
TITLE: Off-Base Water Quality Data December thru April 1984
PAGES: 300 p.
SOURCE: Capt. Mario Ierarti, USAF, 25 May 1984
COMMENTS: This file contains water quality analysis for off-base wells sampled during the period from December 1983 through April 1984. This file set includes both quarterly and non-quarterly sampling records (non-quarterly analysis performed on an as-required basis).

FIRST AUTHOR: USAF
PUBLICATION YEAR: 1983 MONTH: December
TITLE: Off-Base Water Quality Data October thru December 1983
PAGES: 150 p.
SOURCE: Capt. Mario Ierarti, USAF, 25 May 1984
COMMENTS: This file contains analysis for the McClellan AFB off-base well sampling program for the October - December 1983 sampling episode.

RADIAN
CORPORATION

FIRST AUTHOR: USAF
PUBLICATION YEAR: 1984
TITLE: Summary of Post-Phase Two Water Quality Determinations for
Monitor Well 38d, McClellan AFB and Herbicide, Pesticide
Analyses for Selected Base Production Wells
PAGES: 45 p.
SOURCE: Lt. Col. Milo G. Myers, 12 June 1984
COMMENTS: This file contains summarized post-Phase 2 water-quality
determinations for well 38D.

FIRST AUTHOR: USAF
PUBLICATION YEAR: 1984
TITLE: Quarterly Summaries of Weekly VOA Analysis for McClellan AFB
Production Wells; Third Quarter, 1983 thru First Quarter, 1984
PAGES: 40 p.
SOURCE: Lt. Col. Milo G. Myers, 12 June 1984
COMMENTS: This file set contains summaries of analytical findings for
the base production well VOA analysis from 3rd quarter 1983
through 1st quarter 1984. Information from this file was
distributed in the site-specific data base.

FIRST AUTHOR: USAF
PUBLICATION YEAR: 1983 MONTH: October DATE: 20
TITLE: Recent History of McClellan AFB Landfill/Sludge Disposal
Methods and Groundwater Contamination Investigations
PUBLICATION: USAF Internal Document
PAGES: 14 p.
SOURCE: Received from Capt. Mario Ierarti, 25 May 1984 during base visit.
COMMENTS: This USAF internal document lists milestone accomplishments for
the McClellan AFB ground water investigations from 28 January
1976 through 20 October 1983. This document is due to be up-
dated in the near future.

FIRST AUTHOR: USAF
PUBLICATION YEAR: 1983 MONTH: September
TITLE: Off-Base Water Quality Data August thru September 1983
PAGES: 200 p.
SOURCE: Capt. Mario Ierarti, USAF, 25 May 1984
COMMENTS: This file set contains analysis for the McClellan AFB off-
base well sampling program for the August-September 1983
sampling episode.

RADIAN
CORPORATION

FIRST AUTHOR: United States Department of the Interior
OTHER AUTHORS: Geological Survey
PUBLICATION YEAR: 1980
TITLE: Rio Linda Quadrangle, California 7.5 Minute Series (Topographic)
Map
PAGES: 1 plate
SOURCE: USGS

FIRST AUTHOR: United States Department of the Interior
OTHER AUTHORS: Geological Survey
PUBLICATION YEAR: 1980
TITLE: Rio Linda Quadrangle, California 7.5 Minute Series (Topographic) Map
PAGES: 1 plate
SOURCE: USGS

FIRST AUTHOR: United States Department of the Interior
OTHER AUTHORS: Geological Survey
PUBLICATION YEAR: 1980
TITLE: Sacramento East Quadrangle, California, 7.5 Minute Series
(Topographic) Map
PAGES: 1 plate
SOURCE: USGS

FIRST AUTHOR: United States Soil Conservation Service
PUBLICATION YEAR: 1954 MONTH: August
TITLE: Soil Survey of the Sacramento Area, California
PUBLICATION: United States Soil Conservation Service, Series 1941, NG. 11
PAGES: 105 p.
SOURCE: United States Soil Conservation Service
COMMENTS: Describes soils in the Sacramento area.

FIRST AUTHOR: Weir, W. W.
PUBLICATION YEAR: 1950 MONTH: April
TITLE: Soils of Sacramento County California
PUBLICATION: University of California, Division of Soils
PAGES: 119 p.
COMMENTS: Earlier report on soils in Sacramento County, California

FIRST AUTHOR: Wilson, J. T. and R. L. Cosby and G. B. Smith
PUBLICATION YEAR: 1984
TITLE: Potential for Biodegradation of Organo-Chlorine Compounds
in Ground Water
PUBLICATION: EPA-600/D-84-138
PAGES: 17 p.
SOURCE: NTIS
COMMENTS: Describes the results of experiments for the characterization
of the biodegradation of organo-chlorine compounds in ground
water.

APPENDIX 2-B

Methodology for the Reduction of Information
from Site-Specific File Sets to the Computer Database

METHODOLOGY FOR THE REDUCTION OF INFORMATION FROM THE
SITE-SPECIFIC FILE SETS TO THE COMPUTER DATABASE

Following the collection and assimilation of site-specific information into the on- and off-base file sets, data reduction efforts were initiated. Data reduction for the site-specific database consisted of reviewing and reducing information collected for approximately 1300 wells and borings in the study area.

Prior to the data reduction effort, a list of well/boring parameters of significance to the study was developed. A site-specific information summary form was designed from this list. The summary form was used for compiling the data from the file sets into a standard format for assimilation into the site-specific computer database. An example of this form is included in Figure 2.B-1. A listing of the codes used for completing the forms is included as Table 2.B-1.

The procedure used for the review of the site-specific data and for the completion of the site-specific information forms is listed below. In many instances, professional judgement was used for the data reduction effort. The procedure listed below should be considered as the general procedure used for data reduction.

1) **IDENTIFICATION**

For off-base areas, the address for each well location was written in the upper portion of the form to facilitate rapid identification and filing. Site-specific information forms and supporting data for each of the off-base wells have been assembled in the off-base file set by street and by address in ascending order.

On-base wells/borings have no addresses. These wells have been assigned an identification number by previous investigators, the Base or

INSTALLATION RESTORATION PROGRAM
PHASE II (STAGE 2-1)
McCLELLAN AFB, CALIFORNIA

SITE SPECIFIC INFORMATION SUMMARY

GRID CELL: $\bar{\bar{x}}, \bar{\bar{y}}$ (X = 01 - 19, Y = 01 - 25)COORDINATES: X = _____ (Feet East of Grid Origin)
 Y = _____ (Feet North of Grid Origin)VARIABLES: Z₁ = _____ (Source of Information)
 Z₂ = _____ (Current Use)
 Z₃ = _____ (Contamination Status)
 Z₄ = _____ (Depth to Water)
 Z₅ = _____ (Elevation of Water)
 Z₆ = _____ (Top of Screened Interval - Elevation)
 Z₇ = _____ (Bottom of Screened Interval - Elevation)
 Z₈ = _____ (Number of Screened Zones)
 Z₉ = _____ (Highest TCE Concentration [ppb])
 Z₁ = _____ (Most Recent TCE Concentration [ppb])
 Z₁₁ = _____ (Land Surface Elevation)
 Z₁₂ = _____ (Highest 1,1 DCE Concentration [ppb])
 Z₁₃ = _____ (Most Recent 1,1 DCE Concentration [ppb])
 Z₁₄ = _____ (Highest 1,2 DCA Concentration [ppb])
 Z₁₅ = _____ (Most Recent 1,2 DCA Concentration [ppb])

INFORMATION: (Summarize All Pertinent Information for This Location)

Source(s): _____
(Name, Date, or "Well Inventory")

Figure 2.B-1. Site-Specific Information Form

TABLE 2.B-1. NUMERICAL CODES USED FOR COMPLETING SITE-SPECIFIC
INFORMATION SUMMARY FORMS

Variable	Description	Numerical Code*
Z ₁	Source of Information	If: Well = 1 Boring = 2 Other = 3
Z ₂	Current Use	If: Domestic Supply = 1 Municipal Supply = 2 Industrial Supply = 3 Irrigation = 4 Monitor Well = 5 Piezometer = 6 Inactive = 7 Unknown = 9999
Z ₃	Contamination Status	If: Known to be impacted = 1 Known not to be impacted = 2 Unknown = 9999
Z ₄	Depth to Water	Static Water Level in Feet (below land surface or measuring point), if Unknown = 9999
Z ₅	Elevation of Water	Elevation of Static Water Level in Feet, if Unknown = 9999
Z ₆	Top of Screened Interval	Elevation of the Top of the Inter- val from which the Well Receives Ground Water in Feet, if Unknown = 9999
Z ₇	Bottom of Screened Interval	Elevation of the Bottom of the In- terval from which the Well Re- ceives Ground Water in Feet, if Unknown = 9999
Z ₈	Number of Screened Zones	Number of Screened or Perforated Zones, if Unknown = 9999
Z ₉	Highest Trichloro- ethylene (TCE) Concentration	Highest Concentration of TCE Ex- pressed in Parts Per Billion (in- cluding "Not Detected"), if Un- known = 9999

(Continued)

TABLE 2.B-1. (Continued)

Variable	Description	Numerical Code*
Z ₁₀	Most Recent TCE Concentration	Most Recent TCE Concentration Expressed in Parts Per Billion (including "Not Detected"), if Unknown = 9999
Z ₁₁	Land Surface Elevation	Land Surface Elevation in Feet
Z ₁₂	Highest 1,1-Dichloroethylene (DCE) Concentration	Highest 1,1-DCE Concentration Expressed in Parts Per Billion (including "Not Detected"), if Unknown = 9999
Z ₁₃	Most Recent 1,1-DCE Concentration	Most Recent 1,1-DCE Concentration Expressed in Parts Per Billion (including "Not Detected"), if Unknown = 9999
Z ₁₄	Highest 1,2-Dichloroethane (DCA) Concentration	Highest 1,2-DCA Concentration Expressed in Parts Per Billion (including "Not Detected"), if Unknown = 9999
Z ₁₅	Most Recent 1,2-DCA Concentration	Most Recent 1,2-DCA Concentration Expressed in Parts Per Billion (including "Not Detected"), if Unknown = 9999

*The accuracy or precision of entries to the site-specific information summary form were specified, as required. Codes used to specify the precision of an entry are:

Default (no qualification) = Confirmed. Information accurate, considered factual.

R = Reliable. Information reasonably accurate or believed to be accurate, but not confirmed.

Q = Questionable. Information inaccurate or is suspect. Information should be used with caution.

Radian. The identification number for each base well was recorded on the upper portion of the site-specific information forms.

2) **LOCATION**

As discussed in Section 3.1, a cartesian coordinate system was established for the study area for specifying well/boring locations. The location for each well/boring was referenced by grid cell and grid cell coordinates.

Methods used for locating the wells and borings varied. The accuracy of the well locations also varied. Most of the wells located by the off-base well inventory effort (conducted by Radian) were located by measuring the distance from the well to a landmark, normally a roadway. In some instances, inventory personnel were not able to gain access to a given well. In such cases, the location of the well with respect to appropriate landmarks was estimated, provided that the well could be seen. If the well could not be seen, the well location was assumed at the center of the addressed property, as defined by County Assessor's Maps. In both cases, the estimated location was qualified as being reliable but not confirmed.

Numerous private wells were located by a state well survey conducted for the area southwest of McClellan AFB. Locations developed by the survey were considered as accurate and requiring no qualification.

Drillers' logs also provided location data for several wells. The precision with which drillers specified the locations of the wells varied. Wells whose locations were imprecise or unclear were assigned qualified locations. The degree of qualification was commensurate with the apparent precision/accuracy of the data based on the judgement of the data reduction personnel. In some cases, drillers' location data were so imprecise that the well had to be assumed to lie at the center of the indicated property. Location data for wells located at the center of a property were qualified as reliable.

Wells were also located by means of water-quality data from the off-base well sampling program. In some instances, water-quality data provided evidence that a well or wells existed at an address where none were previously noted. In this instance, the location of the well(s) was assumed to be at the approximate center of the indicated property. In this case, the well location was qualified as reliable.

On occasion, wells were spaced so closely together that coordinate data for one or more of the closely-spaced wells were changed slightly to facilitate plotting. If one or more wells were located within twenty feet of one another, the well coordinates of the closely spaced wells were changed such that they differed by twenty feet. A twenty-foot separation was determined as the minimum separation distance for plotting purposes.

3) **SOURCE OF INFORMATION - Z_1**

The source of information for a data point was specified as a well or boring in Variable Z_1 .

4) **CURRENT USE - Z_2**

The current use of a well is specified by Variable Z_2 . Where a well was used for multiple purposes, its most critical usage was specified for Z_2 . As an example, if a well is used for both domestic supply and irrigation, its most critical use with respect to water quality is domestic supply. Thus, domestic supply would be specified for Z_2 .

5) **CONTAMINATION STATUS - Z_3**

The contamination status of a well is specified by this variable. A well was assumed to be contaminated if any organic compounds were found at any time. The well was assumed not to be contaminated if organic analysis for the well indicated that no organic compounds were present.

6) **DEPTH TO WATER - Z_4**

The depth to water for a well is specified by this parameter. Water level data for on- and off-base wells were obtained from several sources. Water-level measurements for on-base wells were obtained by Radian during September, 1984.

Water level measurements for off-base wells were obtained from water well drillers' logs, state well survey data, Radian well inventory data, sampling information, etc. Most of the off-base water level data are non-contemporaneous. Only 1983 or later data were entered as Variable Z_4 . Off-base water level data were considered questionable because they were developed by several investigators and because they are non-contemporaneous.

7) **ELEVATION OF WATER - Z_5**

The elevation of water in a well was determined by subtracting the value of Z_5 from the land surface elevation (Variable Z_{11}). The accuracy or level of confidence for this data is imparted by the lowest level of confidence for Variables Z_5 or Z_{11} .

8) **TOP OF SCREENED INTERVAL - ELEVATION Z_6**

The highest elevation from which a well can receive ground water is specified by this parameter. If the information was specified by the well owner (in the case of a private well), the data was considered as questionable. Top of screen data obtained from drillers' records were also used. The top of the screen was considered to be the elevation of the bottom of a competent strata seal. The only strata seal considered competent was grout or cement.

Most of the data for Z_6 were available as depth. Thus, most values for Z_6 were calculated using Z_{11} . The accuracy of the Z_6 values is imparted by the lowest level of confidence for Variables Z_6 and Z_{11} .

9) **BOTTOM OF SCREENED INTERVAL-ELEVATION - Z_7**

The lowest point of a well which receives ground water is specified as Variable Z_7 . In almost all cases, the lowest point of a well to receive ground water was considered as the total depth of the well.

Most of the data for Z_7 were in depth. Depth specifications provided by the well owner (in the case of private wells) were considered as questionable. Values of Z_7 were calculated using the values for Z_{11} .

10) **NUMBER OF SCREENED ZONES - Z_8**

The number of intervals from which a well receives ground water is specified as Z_8 . Values for the variable were determined mostly from drillers' logs, where available.

11) **HIGHEST TRICHLOROETHYLENE CONCENTRATION - Z_9**

The highest historical concentration of trichloroethylene (TCE) determined for a well is specified by this variable. Chemical data were obtained from previous on- and off-base investigations.

12) **MOST RECENT TCE CONCENTRATION - Z_{10}**

The most recent TCE concentration (up to the time of this study) is specified by this variable.

13) **LAND SURFACE ELEVATION - Z_{11}**

Land surface elevation for a well or boring was determined from United States Geological Survey quadrangle maps, drillers' logs, state well inventory data, and, in the case of on-base monitor wells, surveyors' data. Data obtained from topographic maps were considered as reliable but not confirmed.

14) **HIGHEST 1,1-DICHLOROETHYLENE CONCENTRATION - Z₁₂**

The highest historical concentration of 1,1-Dichloroethylene is specified by this variable.

15) **MOST RECENT 1,1-DICHLOROETHYLENE CONCENTRATION - Z₁₃**

The most recent 1,1-Dichloroethylene concentration for a well is specified by this variable.

16) **HIGHEST 1,2-DICHLOROETHANE CONCENTRATION - Z₁₄**

The highest 1,2-Dichloroethane concentration is expressed by this variable.

17) **MOST RECENT 1,2-DICHLOROETHANE CONCENTRATION - Z₁₅**

The most recent 1,2-Dichloroethane concentration is expressed by this variable.

Pertinent specific data not included in the variables were listed in the general information summary section of the site-specific information form. Sources and dates for information entered on the site-specific forms were referenced on the forms, where necessary. All supporting documentation for the summary forms are provided in the Site-Specific Data File Sets.

APPENDIX 2-C

General Information for McClellan AFB
Ground-Water Monitoring Wells

Pre-Phase II Monitor Wells

Monitor Wells 1 through 4 were installed by the Base during June 1980 as a preliminary effort for evaluating potential impacts to ground-water quality (Brunner and Zipfel, 1981). Monitor Wells 1, 2 and 4 are completed to a depth of about 250 feet below land surface to receive ground water from water-bearing strata extending from the water table to total depth. Monitor Well 3 was completed to a depth of about 200 feet.

Monitor Wells 1 and 2 penetrate several water-bearing strata. Because Monitor Wells 1 and 2 are located in areas of significant ground-water contamination, they were plugged or filled to prevent migration of contaminants within the wells. Monitor Well 1 was filled from total depth to land surface. Monitor Well 2 was filled from total depth to 60 feet.

During drilling, boreholes for Monitor Wells 1 through 4 were extended to a depth of about 400 feet. Based on well completion records, each well borehole was backfilled from a depth of about 400 feet to the well depth. A concrete plug was placed above the backfilled portion of the boreholes, just below the bottom of the well casing. Completion records do not specify the materials used for backfilling monitor well borings 1 through 4. The backfilled portions of these wells may serve as a pathway for vertical movement of contaminants.

Monitor Wells 5 through 9 were installed by the base between September and November 1980. The wells were installed under an expanded ground-water monitoring and soil sampling program conducted on the base (Brunner and Zipfel, 1981). These wells extend to depths of between 120 and 140 feet below land surface. Monitor Wells 5 through 9 are perforated from a depth of about 20 feet to total depth. Gravel packs installed in these wells extend from a depth of about three or four feet to total depth. A concrete seal was emplaced above the gravel packs to the surface.

Water level records indicate that ground-water exists at depths of approximately 80 to 100 feet in Monitoring Wells 5 through 9. Because of the extended perforated length of these wells, they may serve as conduits for vertical movement of contaminants. Contaminants possibly contained within unsaturated strata or perched ground-water zones may also travel through the vertically extensive gravel packs of these wells.

Base personnel reported that Monitor Well 5 has been lost and abandoned since its emplacement. According to Lt. Col Myers, formerly of the Base Bioenvironmental Engineering at McClellan AFB, the riser for Monitor Well 5 has been broken off and the remainder buried. Because this well is located in an area of industrial activity, it may allow rapid infiltration of surface contaminants to ground water.

Monitor Wells 10 through 15 were installed by the base as a further expansion of the monitor well network under the guidance of the United States Geological Survey during July 1981. Each of these wells were completed to a depth of approximately of 100 feet. Completion records obtained for these wells do not include detailed completion specifications (I.E. interval(s) of perforation, grouting etc.).

Phase - II Monitoring

Monitoring Wells 16 through 29 (shallow and deep completions), 30, 31, 33 through 50 were installed under the supervision of Engineering-Science in 1982 for Phase II, Stage 1 McClellan AFB IRP. The majority of these wells were installed in and around Waste Areas A, B, C, and D to determine the effects, if any, of base operations on ground-water quality. Well 32D was scheduled for installation in Phase II but was not installed (Engineering-Science, 1983).

Monitor wells 16 through 29 are multiple completion wells. These wells contain two separate sets of casing and screen to obtain ground water from the first and second water-bearing zones. The remainder of the Phase II

wells are single completion. All of the remaining Phase II monitor wells, except monitor well 38D, were designed to obtain ground water from the first significant water-bearing zone. Monitor well 38D was constructed to obtain ground water from the second or "deep" water-bearing zone. In addition to the monitoring wells, two piezometers were installed during Phase II for the pump test conducted at Monitor Well 44S. The two piezometers (44S-A and 44S-B) are reportedly located 20-to-40 feet "downgradient" from Well 44S. The exact locations and specifications for these wells are unknown. Because of the proximity of these wells to past waste disposal sites, their locations, specifications, and status should be determined.

Gravel packs for several of the monitor wells emplaced in Phase II extend through as much as 50 feet of sediments. Where these extended gravel packs encounter two or more water-bearing zones they may serve to connect shallow contaminated strata with deeper previously uncontaminated units. Of particular concern is the method used for the completion of monitor well 38D. During drilling, the borehole for monitor well 38D was extended to about 225 feet below land surface. The borehole was then backfilled with gravel to a depth of about 135 feet. A five-foot layer of bentonite was placed above the backfilled portion of the hole as a seal. Casing, screen, gravel pack and sealing materials were then emplaced in the hole to complete the well. Based on the geologic log for Monitor Well 38D, the 90 foot section of gravel backfill below the bentonite plug penetrates more than one water-bearing zone. The gravel backfill may serve as a conduit for vertical migration of contaminants. This is an important consideration given the proximity of Monitor Well 38D to Waste Area D.

Phase III/IV Monitor Wells

Monitor Wells 51 through 57 were emplaced in the area of Waste Area D under the supervision of CH2M Hill. The wells were installed in the early part of 1984 for Phase III/IV site characterization study for Area D to develop more information on hydrogeologic conditions in the vicinity of Area D (CH2M Hill, 1984b). Monitor Wells 51 through 57 were completed to depths

ranging between 107 and 185 feet for the characterization of "shallow" and "deep" water-bearing zones.

One perched aquifer monitor well was emplaced within area D as part of Phase III/IV Site Characterization Study for Area D (CH2M HILL, 1984a). This well was installed during January, 1984, when perched conditions were encountered in Auger Boring A-5 at an approximate depth of 39 feet. The screen for this monitor well was set between 35 and 45 feet below ground surface. Following completion activities, the perched-zone well could not be sampled due to the limited amount of water produced to the well. For the purpose of the Site-Specific Database, this well will be referred to as Monitor Well 58P.

APPENDIX 3

This appendix provides information regarding Task 3,
as discussed in text Section 3.3.

Appendix Contents

- 3-A Listing of Wells Identified During the Comprehensive
Well Inventory

EXPLANATION OF APPENDIX 3-A - DATABASE WELL LISTING

Appendix 3-A is a printout of the wells listed in the Site-Specific database. Plate 3 is the corresponding representation of the database showing well usage and location.

An explanation of the database printout is given below:

Grid Column

This is the grid-cell number, from 1-to-19, representing the columns of grid-cells counting from the lower-left corner of the grid to the right (x-direction). For a few wells, the grid column number may be greater than 19 which indicates a well outside of the study area but included in the database.

Grid Row

This is the grid-cell number, from 1-to-25, representing the rows of grid-cells counting from the lower-left corner of the grid to the top (y-direction).

Column Coordinate

This is the x-coordinate, in feet, from the grid origin (lower-left corner).

Row Coordinate

This the the y-coordinate, in feet, from the grid origin (lower-left corner).

Current Use

These integers represent well usage where:

- 1 = Domestic Supply
- 2 = Municipal Supply
- 3 = Industrial Supply
- 4 = Irrigation
- 5 = Monitoring Well
- 6 = Piezometer
- 7 = Inactive (abandoned)
- 8 = Reconnaissance Boring (Radian)
- 9999 = Unknown usage

Address

Addresses of wells located in study area. Some wells (and reconnaissance borings) do not have addresses listed. These are either unknown or are on McClellan AFB.

LINE	ITEM	QUANTITY	UNIT PRICE	TOTAL	REMARKS
1	100	100	100	100	100
2	100	100	100	100	100
3	100	100	100	100	100
4	100	100	100	100	100
5	100	100	100	100	100
6	100	100	100	100	100
7	100	100	100	100	100
8	100	100	100	100	100
9	100	100	100	100	100
10	100	100	100	100	100
11	100	100	100	100	100
12	100	100	100	100	100
13	100	100	100	100	100
14	100	100	100	100	100
15	100	100	100	100	100
16	100	100	100	100	100
17	100	100	100	100	100
18	100	100	100	100	100
19	100	100	100	100	100
20	100	100	100	100	100
21	100	100	100	100	100
22	100	100	100	100	100
23	100	100	100	100	100
24	100	100	100	100	100
25	100	100	100	100	100
26	100	100	100	100	100
27	100	100	100	100	100
28	100	100	100	100	100
29	100	100	100	100	100
30	100	100	100	100	100
31	100	100	100	100	100
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39	100	100	100	100	100
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79	100	100	100	100	100
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82	100	100	100	100	100
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93	100	100	100	100	100
94	100	100	100	100	100
95	100	100	100	100	100
96	100	100	100	100	100
97	100	100	100	100	100
98	100	100	100	100	100
99	100	100	100	100	100
100	100	100	100	100	100

1	10	1680	1690	7	4501 GENE
1	11	1700	18750	4	4701 MARYSVILLE
1	11	1720	18520	7	4701 MARYSVILLE
2	11	1730	18770	1	4701 MARYSVILLE
2	11	1950	18020	7	4515 GENE
2	12	1400	11800	7	475 MARY
2	12	1550	11420	1	1305 MARY
2	12	1700	11850	7	817 MARY
2	12	1930	11450	7	817 MARY
2	13	1150	12920	7	4955 MARYSVILLE
2	13	1190	12910	4	4955 MARYSVILLE
2	13	1320	12370	1	497 MARY
2	13	1650	12740	7	4902 MARYSVILLE
1	13	1720	12300	7	4902 MARYSVILLE
2	13	1750	12460	4999	4904 MARYSVILLE
1	13	1830	12270	7	4907 MARYSVILLE
1	13	1890	12150	7	4914 MARYSVILLE
1	14	1040	10400	7	5004 MARYSVILLE
1	14	1060	10400	1	5012 MARYSVILLE
2	14	1400	10250	7	5000 MARYSVILLE
2	14	1410	10150	1	4941 MARYSVILLE
1	14	1530	10900	7	1209 PINEHURST
1	14	1660	10700	7	1017 PINEHURST
1	14	1700	10820	7	1021 PINEHURST
1	14	1750	10875	7	1019 PINEHURST
1	14	1920	10840	7	1025 PINEHURST
1	14	1950	10920	7	1017 PINEHURST
1	15	1000	14010	7	6010 CLARK
1	15	1020	14070	7	6014 CLARK
1	15	1140	14120	7	6011 CLARK
1	15	1120	14500	1	4771 CLARK
1	15	1200	14420	7	13012 CLARK
2	15	1351	14750	7	6017 CLARK
1	15	1420	14900	7	1000 CLARK
1	15	1450	14920	4999	6019 CLARK
2	15	1540	14980	7	1010 CLARK
2	15	1700	14950	7	1410 CLARK
1	15	1800	14550	7	6017 CLARK

1	15	1520	15200	1	400 90%
2	15	1540	15350	1	500 90%
3	15	1560	15100	1	1000 90%
4	15	1580	15200	1	1000 90%
5	8	2000	7250	9999	4000 90% 1955+
6	8	2050	7200	1	4004 90% 1955+
7	8	2070	7250	1	4004 90% 1955+
8	10	2175	9550	1	4400 90%
9	10	2200	9720	1	4400 90%
10	10	2210	9550	1	4400 90%
11	10	2400	9600	9999	1100 90%
12	10	2460	9380	1	1100 90%
13	10	2510	9580	1	4400 90% 1955+
14	10	2520	9580	1	4400 90% 1955+
15	10	2540	9500	1	1100 90%
16	10	2550	9380	1	4400 90% 1955+
17	10	2580	9350	1	4400 90% 1955+
18	11	2600	10020	1	4500 90%
19	11	2620	10000	1	1100 90%
20	11	2675	10100	1	4500 90% 1955+
21	11	2690	10500	9999	1000 90%
22	11	2680	10880	1	4500 90% 1955+
23	12	2700	11680	1	1100 90%
24	12	2720	11820	1	1100 90%
25	12	2720	11840	1	1100 90%
26	12	2750	11620	1	1100 90%
27	12	2860	11580	1	4000 90% 1955+
28	12	2920	11140	1	4000 90% 1955+
29	12	2930	11975	1	1100 90%
30	13	2980	12150	1	4000 90% 1955+
31	13	2980	12180	1	4000 90% 1955+
32	13	2980	12440	9999	1000 90% 1955+
33	13	2980	12560	1	4000 90% 1955+
34	13	2980	12580	1	4000 90% 1955+
35	13	2980	12190	1	4000 90% 1955+
36	13	2980	12150	1	4000 90% 1955+

14	2220	17550	7	1241 PINEDALE
14	2050	17550	7	1242 PINEDALE
14	2170	17550	4999	1243 PINEDALE
14	2220	17655	7	1244 PINEDALE
14	2220	17675	7	1245 PINEDALE
14	2260	17680	7	1246 PINEDALE
14	2320	17940	7	1247 SANTA ANNA
14	2420	17680	7	1248 PINEDALE
14	2440	17670	7	1249 PINEDALE
14	2440	17680	7	1250 DRY CREEK
14	2440	17680	7	1251 DRY CREEK
14	2920	17400	4999	1252 SANTA ANNA

15	2050	14500	7	1249 CLAIRS
15	2120	14550	7	1251 CLAIRS
15	2200	14880	7	1254 ROAD
15	2220	14550	7	1257 CLAIRS
15	2240	14270	7	1258 CLAIRS
15	2280	14200	7	1259 CLAIRS
15	2400	14580	7	1260 CLAIRS
15	2420	14280	7	1261 CLAIRS
15	2500	14240	7	1262 CLAIRS
15	2540	14180	7	1263 DRY CREEK
15	2540	14260	7	1264 DRY CREEK
15	2540	14280	7	1265 DRY CREEK
15	2550	14280	7	1266 CLAIRS
15	2610	14210	7	1267 DRY CREEK
15	2740	14200	7	1268 DRY CREEK
15	2750	14200	7	1269 DRY CREEK
15	2920	14210	7	1270 CLAIRS
15	2980	14210	7	1271 CLAIRS

15	2100	15580	7	1272 ROAD
15	2175	15170	7	1273 ROAD
15	2180	15100	7	1274 ROAD
15	2220	15580	4	1275 ROAD
15	2400	15150	7	1276 ROAD
15	2520	15210	7	1277 DRY CREEK
15	2520	15580	7	1278 DRY CREEK
15	2875	15320	7	1279 DRY CREEK
15	2940	15819	7	1280 DRY CREEK

15	2875	15150	7	1281 DRY CREEK
15	2900	15540	7	1282 DRY CREEK ROAD

1	17	2950	16950	9	
1	18	2740	17380	1	5701 DRY CREEK
1	18	2780	17380	1	5515 DRY CREEK
1	18	2900	17350	9999	5616 DRY CREEK
1	18	2880	17150	9999	5504 DRY CREEK
1	18	2890	17100	1	5604 DRY CREEK
1	19	2950	18220	9999	5770 DRY CREEK
1	20	2950	19475	1	1226 S ST.
1	21	2100	20250	2	5044 ROCKY ROAD
4	7	1480	5750	2	4105 FELL
4	7	1740	5550	7	4024 FELL
4	8	1110	1550	9999	4148 DRY CREEK
4	8	1230	1150	7	4109 FELL
4	9	1520	5850	1	4371 FELL
4	9	1500	5205	1	1309 HUNTERS
4	9	1530	5175	9999	1315 S ST
4	9	1560	5750	7	4770 HARRISVILLE
4	9	1910	5590	7	4709 HARRISVILLE
4	10	1360	9100	7	1077 FELL
4	10	1420	9035	7	1004 FELL
4	10	1570	9040	1	1108 FELL
4	10	1700	9040	7	1015 FELL
4	11	1200	10750	7	4505 DRY CREEK
4	11	1450	10550	7	1029 SPRUCE
4	11	1700	10780	7	1017 SPRUCE
4	12	1050	11050	1	4640 DRY CREEK
4	12	1130	10590	9999	1122 HUNTER
4	12	1150	10930	7	1005 HUNTER

4	12	3350	11650	7	1024 KALN
4	12	3340	11650	7	1040 KALN
4	12	3350	11940	7	1140 KALN
4	12	3450	11620	7	1104 KALN
4	12	3640	11990	7	1101 KALN
4	12	3660	11830	7	1125 KALN
4	12	3780	11620	7	1136 KALN
4	12	3940	11420	1	1140 KALN
4	13	3810	12010	1	4802 OR- 1955+
4	13	3520	12970	1	1001 SANTA ANNA
4	13	3800	12120	7	1059 KALN
4	14	3420	13260	1	1003 SANTA ANNA
4	14	3550	13400	7	5077 JOYCE
4	14	3560	13475	7	5077 JOYCE
4	14	3560	13575	1	5077 JOYCE
4	14	3640	13160	1	1023 SANTA ANNA
4	14	3720	13080	7	1000 SANTA ANNA
4	14	3730	13160	0000	1015 SANTA ANNA
4	14	3775	13230	7	1001 SANTA ANNA
4	14	3900	13600	1	1005 SANTA ANNA
4	14	3920	13800	1	1005 SANTA ANNA
4	15	3150	14580	1	1010 OLWIRE
4	15	3200	14080	1	1016 OLWIRE
4	15	3220	14260	1	1000 OLWIRE
4	15	3230	14210	1	1000 OLWIRE
4	15	3400	14560	1	1001 OLWIRE
4	15	3460	14570	7	1001 OLWIRE
4	15	3520	14600	1	1001 OLWIRE
4	15	3620	14390	7	1040 OLWIRE
4	15	3630	14560	7	1001 OLWIRE
4	15	3840	14660	1	1041 OLWIRE
4	16	3660	15140	7	5000 OR- 1955+
4	16	3660	15490	7	5001 OR- 1955+
4	16	3730	15500	7	1008 JOYCE
4	16	3800	15760	7	5001 OR- 1955+
4	16	3800	15580	7	1010 JOYCE
4	17	3800	16080	7	5000 OR- 1955+
4	17	3840	16420	0000	1040 JOYCE

4	17	1670	16900	1	1710 48007
4	17	1680	16900	1	1720 48007
4	17	1750	16950	1	1750 48007
4	17	1950	16200	1	1740 48007

4	18	3000	17545	1	5640 ORV GREEN
4	18	3300	17950	1	1410 0.57
4	18	3300	17140	1	1051 48007
4	18	3500	17500	1	1711 48007
4	18	3710	17175	1	1725 48007
4	18	3830	17120	1	1731 48007
4	18	3860	17780	1	1735 0.57
4	18	3860	17860	1	1735 0.57

4	19	3125	18475	1	1077 0.57
4	19	3200	18240	1	1011 0.57
4	19	3250	18600	1	1045 0.57
4	19	3300	18100	1	1410 0.57
4	19	3310	18550	1	1049 0.57
4	19	3350	18425	1	1017 0.57
4	19	3420	18150	1	1002 0.57
4	19	3420	18700	1	1002 0.57
4	19	3500	18300	1	1040 0.57
4	19	3500	18390	1	1025 0.57
4	19	3970	18460	5000	1007 0.57
4	19	3980	18120	1	1044 0.57

4	20	1410	19410	1	1015 0.57
4	20	1749	19075	1	1004 0.57

5	2	4025	1925	1	
5	2	4740	1450	1	1007 48007

5	7	4405	2525	1	4405 48007 1007
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5	8	4900	7340	1	1017 48007
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5	9	4190	8590	1	4190 48007 1015
5	9	4180	8620	1	4180 48007 1015
5	9	4350	8440	1	4180 48007 1015
5	9	4320	8750	1	4410 48007 1015

5	9	4850	5090	7	1510 100NBS
5	9	4390	8770	7	1514 100NBS
5	9	4550	8120	7	1515 100NBS
5	9	4990	8090	7	1522 100NBS

5	10	4600	9025	9999	1440 5211
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5	11	4150	10550	7	1249 14302
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5	12	4090	11670	7	1248 14314
5	12	4250	11940	7	1412 14314
5	12	4560	11590	7	1400 14314
5	12	4760	11920	7	1507 14314

5	13	4050	12950	7	1375 50N70 50N4
5	13	4100	12700	9999	1352 50N70 50N4
5	13	4100	12900	9999	1352 50N70 50N4
5	13	4140	12920	1	1404 50N70 50N4
5	13	4270	12600	1	1414 50N70 50N4
5	13	4700	12900	1	1415 50N70 50N4
5	13	4480	12920	1	1472 50N70 50N4
5	13	4560	12920	1	1450 50N70 50N4
5	13	4660	12740	1	1524 50N70 50N4

5	14	4100	13530	3	
5	14	4200	13030	1	1410 50N70 50N4
5	14	4340	13140	1	1427 50N70 50N4
5	14	4360	13350	1	1471 50N70 50N4
5	14	4550	13350	9999	1477 50N70 50N4
5	14	4700	13240	1	1479 50N70 50N4
5	14	4820	13240	7	1521 50N70 50N4
5	14	4870	13240	1	1521 50N70 50N4

5	15	4050	14530	4	1741 14315
5	15	4920	14650	9999	5025 14315
5	15	4920	14860	9999	5025 14315

5	16	4150	15750	1	440 14
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5	17	4120	16050	1	440 14
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4190	17	16922	7	1415 45007
4700	17	16940	7	1414 45007
4750	17	16875	7	1502 45007
4925	17	16950	7	1510 45007

4270	18	17150	1	1421 45007
4290	18	17690	1	1429 45007
4500	18	17260	0500	1441 45007
4850	18	17250	1	15035 45007

4175	19	18500	1	1409 1 57
4200	19	18560	1	1411 1 57
4400	19	18510	1	1401 1 57
4920	19	18060	1	1522 1 57

4400	20	19420	1	1420 5 57
4776	20	19430	1	1504 5 57
4810	20	19460	0500	1514 5 57
4950	20	19430	0500	1524 5 57

5190	2	1490	7	1521 041405
5450	2	1705	7	1539 0401409
5810	2	1770	7	1542 01035 0401
5850	2	1870	7	1547 01035 0401

5600	7	1812	7	1721 0207405
5780	7	2150	7	1542 015 041005
5940	7	1850	7	1545 101
5960	7	2540	7	1709 101
5985	7	2810	7	1400 101
5990	7	2070	7	180 05 009155

5160	4	1100	7	1579 01040 10
5710	4	1240	0500	1501 0401101

5560	5	5810	7	1544 04050
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5920	7	5750	7	1530 020704
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2	8	5240	7950	9999	1541 165513
2	8	5250	7975	9999	1541 165513
2	9	5010	8730	7	1525 YOUNGS
2	9	5010	8400	7	1525 YOUNGS
2	9	5120	8740	7	1541 YOUNGS
2	10	5100	9700	8	
2	10	5510	9410	7	4414 9415
2	11	5070	10700	7	1525 9405
2	11	5100	10300	7	1170 9405
2	11	5160	10920	7	4670 9415
2	11	5200	10750	7	1525 9405
2	11	5200	10380	7	1525 9405
2	11	5710	10900	7	4550 9415
2	12	5050	11550	7	1548 9415
2	12	5050	11475	9999	4777 9415
2	12	5110	11100	7	4545 9415
2	12	5165	11775	7	4725 9415
2	12	5190	11135	7	4710 9415
2	12	5200	11150	7	4725 9415
2	12	5240	11290	7	4721 9415
2	12	5440	11600	7	4915 9415
2	12	5500	11700	7	4718 9415
2	13	5050	12000	7	4915 9415
2	13	5050	12000	7	4945 9415
2	13	5100	12000	7	4945 9415
2	13	5200	12550	7	4909 9415
2	13	5280	12750	7	4919 9415
2	13	5240	12750	7	4971 9415
2	13	5320	12410	9999	4945 9415
2	13	5460	12940	7	4915 9415
2	13	5510	12500	7	4910 9415
2	14	5150	12890	7	5117 9415
2	14	5150	12920	7	5117 9415
2	14	5180	12730	7	5121 9415
2	14	5190	12900	7	5121 9415
2	14	5200	12900	8	

	15	5375	14625	3	
	17	5020	16780	1	1570 45007
	17	5180	16560	7	5519 64LE+
	17	5180	16670	7	5525 64LE+
	17	5200	16750	7	5519 64LE+
	17	5210	16600	7	5521 64LE+
	17	5580	16500	9	
	18	5080	17380	1	5625 16 57
	18	5100	17800	1	5705 16 57
	18	5225	17600	9999	5647 16 57
	18	5280	17700	1	5706 16 57
	18	5400	17900	1	5712 16 57
	18	5410	17900	7	5712 16 57
	18	5550	17275	1	1617 45007
	18	5560	17400	9999	5624 16 57
	18	5680	17980	1	5724 16 57
	18	5700	17210	1	1621 45007
	18	5820	17200	9999	1623 45007
	18	5950	17275	1	1627 45007
	19	5020	18540	1	5815 16 57
	19	5060	18130	1	1570 0 57
	19	5080	18720	1	5829 16 57
	19	5100	18600	1	5827 16 57
	19	5100	18860	1	5841 16 57
	19	5130	18130	1	1570 0 57
	19	5230	18950	7	5849 16 57
	19	5400	19100	1	5875 16 57
	19	5400	19180	1	5842 16 57
	19	5400	19290	1	5849 16 57
	19	5520	18700	1	5804 16 57
	19	5520	18900	1	5875 16 57
	19	5520	18940	1	5840 16 57
	19	5560	18455	1	1570 0 57
	19	5700	18280	9999	1574 0 57
	19	5860	18540	1	1574 0 57
	19	5910	18700	1	1574 0 57
	20	5100	18540	9999	1574 0 57
	20	5120	18540	9999	1574 0 57

5	20	5100	19010	1	5949 15 ST.
5	20	5200	19140	9999	5905 15 ST.
5	20	5220	19550	1	5945 15 ST.
5	20	5450	19950	1	5870 15 ST.
5	20	5520	19005	4	5844 15 ST.
5	20	5550	19350	1	1610 E ST.
5	20	5550	19540	1	1617 E ST.
5	20	5600	19800	9	
5	20	5650	19475	9999	1610 E ST.
5	20	5700	19400	1	1670 E ST.
5	20	5850	19350	1	1640 E ST.

5	21	5440	20940	1	1612 S ST.
5	21	5620	20925	1	1622 S ST.
5	21	5650	20910	1	1622 S ST.
5	21	5700	20320	1	5122 15 ST.

5	22	5340	21920	9999	5729 15 ST.
5	22	5350	21800	1	5712 15 ST.
5	22	5050	21900	1	5719 15 ST.
5	22	5360	21200	1	1611 S ST.
5	22	5300	21620	9999	5730 15 ST.
5	22	5320	21690	9999	5745 15 ST.
5	22	5350	21275	1	1675 S ST.

5	23	5350	22000	9999	5774 15 ST.
5	23	5350	22050	1	5740 15 ST.
5	23	5350	22100	9999	5745 15 ST.
5	23	5640	22020	1	1675 15 ST.
5	23	5740	22150	9999	1640 15 ST.

5	1	5000	450	2	
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5	2	5450	1580	9999	2231 DEL R450
5	2	5920	1580	1	2260 DEL R450

5	3	5010	2740	1	2274 MONTRASSE
5	3	5075	2275	1	2212 L25 R09155
5	3	5075	2620	1	2215 MONTRASSE
5	3	5030	2750	1	2219 MONTRASSE
5	3	5080	2390	1	2405 MONTRASSE
5	3	5120	2340	1	2197 MONTRASSE

7	7	5012	1870	7	1400 MONTROSE
7	7	5012	1820	0000	1710 MONTROSE
7	7	5040	1900	7	1705 LOS ROBLES
7	7	5080	1960	7	1755 LOS ROBLES
7	7	5400	2030	7	1708 LOS ROBLES
7	7	5410	2040	7	1440 MONTROSE
7	7	5420	2250	7	1704 LOS ROBLES
7	7	5520	2510	7	1745 LOS ROBLES
7	7	5910	2485	0000	1621 LOS ROBLES
7	7	5940	2560	7	1717 DOUGLAS

7	4	5080	1875	7	1770 ROSALIND
7	4	5575	1450	7	1540 KERN
7	4	5610	1430	7	1510 KERN
7	4	5760	1280	7	1809 VERANO
7	4	5900	1500	7	1825 VERANO
7	4	5980	1150	7	1810 VERANO

7	5	5990	5985	0000	1910 MONTROSE
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7	7	5220	5250	7	1940 LORRAINE
7	7	5760	6110	7	1941 KERN
7	7	5860	5775	7	1804 NORTH
7	7	5520	5320	7	1940 KERN
7	7	5640	6320	7	1810 NORTH

7	11	5500	10200	7	1749 REYNOLDS
7	11	5910	10450	5	
7	11	5970	10400	5	

7	12	5400	11950	5	
7	12	5520	11780	7	1474 KERN

7	13	5620	10180	4	1517 KERN
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7	18	5000	17150	0000	1715 MONTROSE
7	18	5000	17150	0000	1715 MONTROSE
7	18	5060	17140	7	1717 MONTROSE
7	18	5060	17180	7	1717 MONTROSE
7	18	5540	17140	7	1741 MONTROSE
7	18	5920	17140	0000	1817 MONTROSE

7	19	6120	18450	1	1717 C ST.
7	19	6170	18080	1	1740 C ST.
7	19	6460	18180	1	1770 C ST.
7	19	6625	18525	1	1733 C ST.
7	19	6680	18450	1	1801 C ST.
7	19	6750	18120	1	1812 C ST.
7	19	6775	18400	1	1724 C ST.
7	19	6800	18550	1	1807 C ST.
7	19	6900	18390	9999	1728 C ST.
7	19	6950	18120	1	1820 C ST.
7	19	6950	18330	1	1738 C ST.

7	20	6080	19340	1	1712 E ST.
7	20	6380	19960	9999	1749 E ST.
7	20	6440	19280	1	1740 E ST.
7	20	6670	19960	7	1749 E ST.
7	20	6720	19780	9999	1811 E ST.
7	20	6780	19430	9999	1746 E ST.
7	20	6860	19800	1	1827 E ST.

7	21	6040	20610	9999	1708 S ST.
7	21	6150	20670	1	1716 S ST.
7	21	6350	20425	9999	1750 S ST.
7	21	6350	20435	9999	1750 S ST.
7	21	6350	20450	9999	1750 S ST.
7	21	6350	20600	1	1744 S ST.
7	21	6460	20840	7	1771 S ST.
7	21	6520	20850	1	1810 S ST.
7	21	6620	20850	1	1810 S ST.
7	21	6620	20870	7	1820 S ST.
7	21	6810	20630	1	1871 S ST.

7	22	6120	21120	9999	1717 S ST.
7	22	6320	21140	1	1772 S ST.
7	22	6380	21140	1	1777 S ST.
7	22	6470	21240	1	1820 S ST.
7	22	6460	21140	9999	1777 S ST.
7	22	6549	21140	1	1745 S ST.
7	22	6760	21140	9999	1829 S ST.

7	23	6040	22080	1	1711 S ST.
7	23	6150	22080	1	1712 S ST.

	27	5150	22100	7	1715 I ST.
	27	5200	22200	9999	1842 I ST.
	27	5435	22100	1	1730 I ST.
9	2	7080	1560	1	3256 DEL PASO
8	2	7300	1540	4	3320 DEL PASO
9	2	7380	1500	7	3310 DEL PASO
8	2	7380	1590	7	3308 DEL PASO
9	3	7020	2680	7	3717 DOUGLAS
9	3	7180	2700	7	3719 ALBANY
9	3	7220	2710	7	3930 LOS ROBLES
8	3	7250	2100	9999	3725 O FARRELL
9	3	7250	2690	7	3827 LOS ROBLES
8	3	7460	1960	7	3917 LOS ROBLES
9	3	7450	2980	7	3917 LOS ROBLES
9	3	7770	1910	7	3933 LOS ROBLES
9	3	7820	2470	9999	3945 LOS ROBLES
8	3	7840	1800	7	
9	4	7010	1750	7	3944 DOUGLAS
9	4	7040	1780	7	3945 ALBANY
9	4	7150	1720	7	3946 DOUGLAS
9	4	7150	1700	7	3946 DOUGLAS
9	4	7190	1830	7	3947 DOUGLAS
9	4	7240	1750	7	3951 DOUGLAS
9	4	7250	1490	7	3950 MARSHALL
9	4	7470	1560	7	3949 MARSHALL
9	4	7440	1440	7	3951 MARSHALL
9	4	7470	1250	7	3954 ALBANY
9	4	7470	1500	7	3950 MARSHALL
9	4	7590	1700	7	3956 ALBANY
9	4	7600	1740	7	3955 LOS ROBLES
9	4	7700	1700	7	3960 DOUGLAS
9	4	7750	1800	7	3974 ALBANY
9	4	7810	1700	7	3975 ALBANY
9	4	7820	1260	7	3981 ALBANY
9	4	7870	1700	7	3971 ALBANY
9	4	7995	1560	7	3985 ALBANY
9	5	7450	4700	7	3987 ALBANY
9	5	7050	5600	7	3985 MARSHALL

8	5	7350	5990	7	1917 NATOMA 24V
8	6	7360	5860	7	1921 NATOMA 24V
8	6	7840	5850	1	1950 GRAND
8	7	7840	6080	7	1921 MAHOGANY
8	7	7220	6050	9999	1925 MAHOGANY
8	7	7800	6950	8	
8	9	7400	8980	7	1920 DELL
8	11	7860	10430	7	
8	11	7220	10950	7	1944 REYNOLDS 24V
8	12	7860	11455	7	1915 MAIN
8	12	7200	11150	7	1941 REYNOLDS 24V
8	12	7250	11150	7	1945 REYNOLDS 24V
8	13	7740	12950	5	
8	14	7425	13550	8	
8	18	7860	17150	1	1941 4800T
8	18	7230	17180	1	1945 4800T
8	18	7420	17200	1	1901 4800T
8	18	7540	17250	1	1915 4800T
8	18	7740	17200	1	1917 4800T
8	18	7740	17580	1	5545 20 ST.
8	18	7780	17420	1	5637 20 ST.
8	18	7780	17500	7	5801 20 ST.
8	18	7785	17730	7	5701 20 ST.
8	18	7800	17870	9999	1919 4800T
8	18	7800	17420	9999	5629 20 ST.
8	18	7800	17500	1	5801 20 ST.
8	18	7800	17740	9999	5701 20 ST.
8	18	7840	17220	1	5801 20 ST.
8	19	7200	18650	1	1921 20 ST.
8	19	7120	18850	1	1944 20 ST.
8	19	7160	18860	1	1946 20 ST.
8	19	7275	18625	1	1925 20 ST.

1	19	7120	18720	7	5611 10 ST.
1	19	7200	18720	1	5612 10 ST.
1	19	7200	18520	1	1901 0 ST.
1	19	7440	18500	1	1904 0 ST.
1	19	7450	18550	1	1909 0 ST.
1	19	7450	18600	1	1905 0 ST.
1	19	7500	18200	1	1928 0 ST.
1	19	7520	18620	1	1913 0 ST.
1	19	7600	18600	1	1919 0 ST.
1	19	7600	18620	1	1923 0 ST.
1	19	7740	19200	1	1946 0 ST.
1	19	7930	18940	4	5917 10 ST.

1	20	7120	19500	1	1947 E ST.
1	20	7250	19225	1	1940 E ST.
1	20	7500	19420	1	1916 E ST.
1	20	7620	19790	1	1919 E ST.
1	20	7650	19500	1	1970 E ST.
1	20	7740	19780	1	1919 E ST.
1	20	7800	19280	4	5933 10 ST.
1	20	7840	19500	1	1979 E ST.
1	20	7850	19780	1	1947 E ST.
1	20	7960	19460	1	5945 10 ST.

1	21	7810	18100	1	1927 E ST.
1	21	7800	20480	1	5731 10 ST.
1	21	7750	18000	1	5819 10 ST.
1	21	7780	20540	1	1980 E ST.
1	21	8020	22860	5900	1918 E ST.

1	22	7400	21175	7	1977 E ST.
1	22	7420	21340	5900	1975 E ST.
1	22	7650	21170	1	1939 E ST.
1	22	7675	21120	5900	1979 E ST.
1	22	7750	21950	1	1929 E ST.
1	22	7760	21540	1	5749 10 ST.
1	22	7760	21560	1	5725 10 ST.
1	22	7775	21130	5900	1975 E ST.
1	22	7930	21910	5900	5715 10 ST.
1	22	8750	21420	1	5735 10 ST.

1	23	7550	22050	5900	1925 E ST.
1	23	7740	22000	5900	5731 10 ST.

8	24	1525	21725	1	6524 DEL 37
9	2	8250	1500	7	2170 CRAWFORD
9	3	9020	2550	9999	7470 DEL P450
9	3	9030	2700	7	7464 DEL P450
9	3	9050	3920	7	7470 DEL P450
9	3	9070	2810	7	7470 DEL P450
9	7	9100	2170	7	2171 VERANO
9	3	9520	1520	7	2153 VERANO
9	4	9040	3680	7	2009 VERANO
9	4	9040	3700	7	2009 VERANO
9	4	9040	3720	7	2009 VERANO
9	4	9060	3000	9999	7490 DEL P450
9	4	9700	7050	7	7530 DEL P450
9	4	9480	7460	1	7515 DAYTON
9	4	9700	7440	9999	7511 DEL P450
9	4	9770	7895	7	2117 EDITH
9	4	9750	7895	7	2121 EDITH
9	4	9800	7150	1	7616 DEL P450
9	4	9800	7740	7	7670 DAYTON
9	4	9900	7400	7	7627 DEL P450
9	5	9230	4140	4	7620 DAYTON
9	5	9300	4020	7	7619 DAYTON
9	5	9300	4600	7	7601 DAYTON
9	5	9370	4400	7	7577 DAYTON
9	5	9080	4920	7	7703 DAYTON
9	5	9390	4620	7	7705 DAYTON
9	5	9400	4020	7	7629 DAYTON
9	5	9410	4450	7	7641 DAYTON
9	5	9440	4400	7	2116 EDITH
9	5	9890	4410	7	2124 EDITH
9	5	9950	4350	7	2118 EDITH
9	5	9140	5520	7	7619 PINE
9	5	9220	5500	7	7570 PINE
9	5	9320	5120	7	7610 PINE
9	5	9570	5090	7	7616 PINE
9	5	9580	5400	7	7614 PINE

8	7	8230	8180	7	2011
4	7	8360	8120	7	2021 DAYTON
4	7	8550	8150	7	2113 HARTIS
4	7	8580	8260	7	2030 DAYTON
8	7	8750	8360	7	2112 NORTH
9	7	8840	8330	7	2120 NORTH
4	7	8910	8060	7	2126 NORTH
8	7	8980	8100	7	2025 DAYTON

4	3	8080	7180	7	4105 PINELL
4	3	8110	7530	7	4100 PINELL
4	3	8150	7680	7	2010 PENE
4	3	8190	7590	7	4112 PINELL
8	3	8190	7380	7	4116 PINELL
4	3	8220	7580	7	4121 VERALEE
4	3	8320	7580	7	4120 VERALEE
4	3	8350	7140	7	4105 DAYTON
8	3	8480	7910	7	2041 PENE
8	3	8600	7780	7	2030 PENE
8	3	8800	7900	7	2125 PENE
8	3	8820	7320	7	4044 DAYTON
4	3	8820	7640	7	2100 PENE
4	3	8850	7180	7	4115 DAYTON
8	3	8850	7080	7	4118 DAYTON
8	3	8850	7430	7	4110 DAYTON
4	3	8850	7520	7	4100 DAYTON
8	3	8880	7250	7	4104 DAYTON
4	3	8900	7980	7	2121 PENE

4	4	8180	8720	7	4000 PINELL
8	4	8470	8750	6000	2030 PELL
8	4	8660	8900	7	2110 PELL
4	4	8910	8710	7	2075 PELL
4	4	8980	8120	6000	4121 BARBER
4	4	8980	8200	7	4119 BARBER
4	4	8980	8580	7	4127 BARBER
8	4	8990	8560	6000	4107 BARBER

4	10	8040	9910	6000	4100 PINELL
4	10	8190	9740	6000	4004 PINELL
4	10	8200	9500	7	4001 DAYTON
4	10	8270	9700	7	4025 DAYTON
4	10	8270	9510	7	4070 DAYTON
4	10	8270	9540	7	4009 DAYTON

4	10	8140	9770	7	4417 04X10N
4	10	8120	9700	7	4417 04X10N
4	10	8100	9650	9	
4	10	8080	9600	7	4416 04X10N
4	10	8060	9550	7	4408 04X10N
4	10	8040	9500	7	4416 04X10N
4	10	8020	9450	7	4402 04X10N
4	10	8000	9400	7	4556 04X10N
4	10	7980	9370	7	4440 04X10N
4	10	7960	9320	7	4403 04X10N
4	10	7940	9270	7	

4	11	8150	10900	5	
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4	10	8050	10910	5	
4	10	8030	10910	5	

4	14	8400	17500	9	
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4	15	8140	17700	9	
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4	17	8010	17810	5	
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4	18	8775	17775	7	
4	18	8750	17700	5	
4	18	8690	17610	5	
4	18	8600	17500	5	
4	18	8620	17150	5	
4	18	8620	17050	7	
4	18	8700	17900	5	
4	18	8740	17250	5	
4	18	8800	17450	4	
4	18	8850	17650	5	
4	18	8910	17150	5	
4	18	8920	17500	4	
4	18	8950	17150	4	

4	18	8700	17700	7	8700 18 07
4	18	8775	17775	7	8775 18 07
4	18	8700	17500	4	8700 18 07

1	19	8575	18975	3	
1	19	8620	19060	5	
1	19	8775	19240	5	
1	19	8830	19870	4	
1	19	8940	19850	5	
1	19	8960	18200	0	
1	20	8075	19750	3	
1	20	8120	19420	1	8919 20 57.
1	20	8120	19420	1	8949 20 57.
1	20	8140	19280		8908 20 57.
1	20	8250	19950	1	1339 5 57.
1	20	8300	19480	1	1802 5 57.
1	20	8310	19550	1	1812 5 57.
1	20	8420	19580	1	1848 5 57.
1	20	8510	19580	9999	1849 5 57.
1	20	8550	19920	9999	2101 5 57.
1	20	8730	19550	1	1856 5 57.
1	20	8850	19650	1	2101 5 57.
1	20	8940	19150	9999	2132 5 57.
1	21	8120	20440	1	8015 20 57.
1	21	8120	20630	1	8104 20 57.
1	21	8120	20925	1	8149 20 57.
1	22	8120	21780	1	8112 20 57.
1	22	8150	21250	1	8200 20 57.
1	22	8150	21860	1	8239 21 57.
1	22	8140	21680	1	8140 20 57.
1	22	8450	21730	1	8119 21 57.
1	22	8775	21725	1	2112 21 57.
1	22	8775	21775	1	2112 21 57.
1	27	8050	22150	9999	2125 21 57.
1	27	8050	22740	1	8452 20 57.
1	27	8050	21120	1	2215 21 57.
1	27	8200	22250	1	2212 21 57.
1	27	8200	22450	1	2105 21 57.
1	27	8745	22740	1	2125 21 57.
1	27	8995	22850	1	2113 21 57.
1	24	8812	22580	1	8545 21 57.
1	24	8808	22450	1	8577 21 57.

4	25	3163	24820	1	0170 ELKHORN
4	25	3580	24900	1	0116 ELKHORN
4	25	3767	24900	1	0120 ELKHORN
4	25	3846	24900	7	0132 ELKHORN
4	25	5925	24900	4	0140 ELKHORN

10	1	9720	190	2	
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10	4	9075	3950	7	7644 DORTCH
10	4	9140	3920	7	7481 ASTORIA
10	4	9440	3720	7	7520 ASTORIA
10	4	9750	3910	7	7221 SOUTH

10	5	9030	4700	7	0132 FOWANO-E
10	5	9280	4850	7	0125 ASTORIA
10	5	9160	4200	7	0135 FOWANO-E
10	5	9280	4200	7	7524 ASTORIA
10	5	9420	4175	7	0117 CONIFER
10	5	9400	4200	7	0105 CONIFER
10	5	9400	4200	9999	0140 FOWANO-E
10	5	9575	4570	7	0125 FOWANO-E
10	5	9560	4720	7	0129 FOWANO-E
10	5	9770	4170	9999	7671 RIPLEY
10	5	9770	4200	7	7675 RIPLEY
10	5	9775	4700	7	7645 RIPLEY
10	5	9800	4700	7	7677 RIPLEY
10	5	9800	4775	7	7649 RIPLEY
10	5	9915	4810	7	7724 RIPLEY
10	5	9950	4840	7	7724 RIPLEY

10	5	9020	5990	7	7591 ASTORIA
10	5	9365	5940	7	0117 FOWANO-E
10	5	9540	5950	7	0125 FOWANO-E
10	5	9590	5930	7	0970 RIPLEY
10	5	9720	5190	9999	0145 FOWANO
10	5	9720	5210	9999	0145 FOWANO
10	5	9750	5800	7	0127 FOWANO-E

10	7	9010	5750	7	7975 ASTORIA
10	7	9035	5850	7	7917 ASTORIA
10	7	9420	5420	7	7644 DORTCH

10	7	9100	6740	7	4015 9499494
10	7	9100	6940	9999	4016 9499494
10	7	9105	6995	1	4018 9499494
10	7	9110	6785	1	4019 9499494
10	7	9110	6860	7	4037 ASTORIA
10	7	9110	6990	7	4041 ASTORIA
10	7	9125	6740	1	4074 9499494
10	7	9230	6200	7	1919 ASTORIA
10	7	9440	6770	7	4025 ASTORIA
10	7	9450	6580	7	1001 NORTH
10	7	9500	6400	7	1002 NORTH
10	7	9510	6540	9999	1000 NORTH
10	7	9550	6360	7	1025 NORTH
10	7	9600	6580	7	1017 NORTH
10	7	9620	6580	7	1017 NORTH
10	7	9640	6580	7	1017 NORTH
10	7	9680	6740	7	1928 ASTORIA
10	7	9700	6800	7	1909 ASTORIA

10	9	9800	7625	7	1109 SEVE
10	9	9855	7920	7	1120 SEVE
10	9	9890	7590	7	1114 SEVE
10	9	9110	7580	7	1104 SEVE
10	9	9195	7675	7	1100 SEVE
10	9	9200	7950	7	1145 SEVE
10	9	9280	7960	7	1145 SEVE
10	9	9290	7150	7	4110 ASTORIA
10	9	9300	7220	7	4104 ASTORIA
10	9	9300	7650	7	1020 SEVE
10	9	9500	7010	9999	1017 NORTH LINE
10	9	9540	7575	7	1020 SEVE
10	9	9640	7020	7	1011 NORTH LINE
10	9	9700	7100	7	1009 NORTH LINE
10	9	9750	7510	7	1011 SEVE
10	9	9800	7490	7	1017 SEVE
10	9	9810	7690	7	1015 SEVE
10	9	9820	7190	7	1047 NORTH LINE
10	9	9880	7020	7	1037 NORTH LINE
10	9	9910	7170	7	1031 NORTH LINE
10	9	9960	7700	7	1003 SEVE

10	9	9010	6720	7	4077 9499494
10	9	9150	6120	7	4024 9499494
10	9	9190	6030	7	4010 9499494
10	9	9280	6180	7	4021 9499494
10	9	9330	6750	7	4075 9499494

9240	9	9240	9760	7	1044 DOWNAR
9250	9	9250	9750	8	
9260	9	9260	9730	7	4000 ASTOR L
9280	9	9280	9740	7	1015 DOWNAR
9440	9	9440	9720	7	1032 DOWNAR
9510	9	9510	9840	7	4000 ASTOR L
9530	9	9530	9840	7	4000 ASTOR L
9550	9	9550	9940	7	4000 ASTOR L
9640	9	9640	9820	7	1038 BELL
9650	9	9650	9850	8	
9900	9	9900	9820	7	1045 DOWNAR
9940	9	9940	9920	7	1048 BELL
9960	9	9960	9980	1	1048 DOWNAR
9625	10	9625	9440	7	
9750	10	9750	9820	7	1038 BELL
9800	10	9800	9820	7	1038 BELL
9960	10	9960	9400	5	
9540	12	9540	11890	5	
9540	12	9540	11890	5	
9400	17	9400	12600	5	
9440	17	9440	12640	5	
9970	17	9970	12100	5	
9720	14	9720	10090	5	
9720	14	9720	10280	5	
9720	14	9720	10720	5	
9970	15	9970	14120	5	
9970	15	9970	14140	5	
9970	15	9970	14160	5	
9700	15	9700	15250	5	
9870	15	9870	15720	5	
9250	17	9250	15970	5	
9250	17	9250	16470	5	
9410	17	9410	16590	5	

10	10	9240	19220	5	
10	10	9050	19150	1	5905 10 57
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11	24	10640	23520	7	6546 24 ST.
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	11	10020	20030	9999	5200 16 57
	11	10000	20750	1	5122 16 57
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13	14	17460	15070	1	
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18	15	17100	24000	1	24000 14 57
18	15	17150	24000	1	24000 14 57
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18	11	18400	11070	1	
18	11	18740	11550	1	
18	14	18500	17375	1	

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18	18	18900	19250	2	
19	20	19220	20000	7	6224 WATT
19	21	19260	20550	3	6252 WATT
19	22	19300	21460	1	6270 WATT
19	22	19345	21705	1	6228 WATT
20	20	19350	19400	2	
20	22	19000	20375	2	
21	5	20350	4950	2	

APPENDIX 4

This appendix provides information regarding Task 4,
as discussed in text Section 3.4.

Appendix Contents

- 4-A Agency Correspondence Regarding Proposed
Reconnaissance Boring Program

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD—
CENTRAL VALLEY REGION

3201 S STREET

SACRAMENTO CALIFORNIA 95816-7090

PHONE (916) 445-0270



21 June 1984

Captain Ieradi
U.S.A.F. Clinic McClellan/SGB
McClellan Air Force Base
Sacramento, CA 95652

RADIAN CORPORATION'S PROPOSED RECONNAISSANCE BORINGS PLAN

Enclosed are the Regional Board's recommended changes to the Radian Corporation's reconnaissance borings proposal as discussed at the 21 June 1984 meeting.

I urge you to incorporate these changes into your contract with Radian Corporation as expeditiously as possible so as not to significantly delay this project.

A handwritten signature in cursive script, reading 'Larry F. Nash'.

LARRY F. NASH
Senior Engineer

JJT/gs

Enclosure

cc: Mr. Jeff Rosenbloom, U.S. Environmental Protection Agency, T-4-1
Mr. John Wesnousky, Department of Health Services, Toxic Substances
Control Division, Sacramento
Mr. Carl Lischkeski, Department of Health Services, Sanitary Engineering
Section, Sacramento
Mr. Ken Knight, Sacramento County Health Dept.
Mr. Lee Harry, City of Sacramento

Memorandum

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD • CENTRAL VALLEY REGION

3201 S Street

Sacramento, California 95816

Phone: 445-0270

TO: Larry F. Nash
Senior Engineer

FROM: John J. Tomko
Area Engineer

DATE: 22 June 1984

SIGNATURE: 

SUBJECT: RADIAN PROPOSAL ON RECONNAISSANCE BORINGS OFF-BASE AT MC CLELLAN AIR
FORCE BASE

I met with the Air Force, Radian Corporation, the Department of Health Services, and the City and County of Sacramento on 21 June 1984 at McClellan on the proposed reconnaissance boring plan for off-base areas at McClellan.

I recommended the following changes be made to the proposal:

1. Additional borings be drilled at the following locations:
 - a. One boring between 'G' and 'I' Streets along 24th Street.
 - b. One boring at the intersection of Dry Creek and Ascot Avenue, near City Well 154.
 - c. At least 2 additional borings within the central off-base area bounded by Ascot Avenue, Raley Boulevard, Main Avenue and the Webster Property Line of the Base.
 - d. Additional borings, south of the Base, to identify and locate the buried channel bed described in Department of Water Resources Bulletin No. 118. At least 3 may be required.
 - e. The consultant should consider additional upgradient borings per the Department of Health Services' recommendation.
2. All borings should be to a maximum depth of 200 feet, not 150 feet.
3. Four water samples per boring should be taken instead of three because of the increase in boring depth and the distinct possibility of encountering a deeper water bearing zone below the 150 foot level.
4. HNU's readings should be taken and correlated with boring depths at those borings drilled adjacent to Base boundaries.

JJT/gs

APPENDIX 5

This appendix provides information regarding Task 5,
as discussed in text Section 3.5.

Appendix Contents

- 5-A City of Sacramento Encroachment Permit
- 5-B Sacramento County Department of Health - Drilling Permit
- 5-C Reconnaissance Boring Drilling Logs
- 5-D Results of Grain-Size Distribution Analyses of Soil Samples
- 5-E Results of Laboratory Analyses of Water Samples
- 5-F Raw Laboratory Data for Selected Water Samples
(Volatile Organic Analysis - EPA 601)

APPENDIX 5-A

City of Sacramento Encroachment Permit

City of Sacramento Public Works Department
APPLICATION FOR ENCROACHMENT/EXCAVATION PERMIT

FILE NUMBER

PERMIT NUMBER

072784-1

START DATE

COMPLETION DATE

U.S.A. NUMBER

ROUTING AS NECESSARY:

DEPARTMENT: INITIALS:

Engineering

Traffic Eng. RC.F.

Water Sewer

Street Maint

TRAFFIC COMMANDER

(YES) (NO)

Approval and issuance of this permit subject to a \$120.00 fee in compliance with ordinance #83070.

REMARKS:

9:20 AM 7/26/84

APPLICANT: Radian Corporation

ADDRESS: 3401 La Grande Blvd.

ZIP: 95823

Application is hereby made for an Encroachment/Excavation Permit to perform the following:

1. Applicant's work order or job number:

2. Location of work: S & W side McClellan AFB

3. General description of work to be done: Exploration borings 5 1/8" diameter for soil & water testing.

(See attachment)

Estimated start of work: 7/30/84. Estimated time needed, 42 days.

5. Name and phone number of person familiar with details:

E. Wayne Pearce (916)421-8700

NOTE: Submit application (2 copies) - Attach sketch (2 copies) showing plan and cross-section, indicating clearly location of work with respect to face of curb, edge of pavement or property line.

SIGNED:

E. Wayne Pearce

DATE:

7/26/84

Application approved as indicated on reverse. Call City Street Maintenance Division, telephone 449-5236 or 449-5386, for permit number, not less than 24 hours prior to starting work. Permit will thereupon be issued.

M. D. L. 7/26/84

Supervising Engineer

Street Maintenance Superintendent

Name and telephone number of caller

Name and telephone number of agency inspector, contractor, or supervisor

appropriate

All work is subject to the requirements of City Ordinance #4250 and the supplements thereto. Your attention is particularly directed to the following:

1. Permit good for 42 days from date of issuing permit number.
2. Unless otherwise indicated, working hours are 8:30 a.m. to 4:00 p.m. Mon. - Fri.
3. Adequate barricading and/or flagging shall be provided.
4. Trench backfill in street section to have relative compaction of 95% and shall be brought up in lifts of not over 8 inches. Upper 12 inches of trench backfill to have 8 inches of Class II compaction road rock and 4 inches of asphaltic concrete. Trench backfill off paved area to have relative compaction of 90%.
5. All concrete to be saw cut according to Section 4 of the "Standard Operating Procedures".
6. All asphaltic concrete repaving in the street right of way shall be accomplished by City forces. Compensation shall be at the established rate.
7. All "Cal-Osha" safety regulations shall be complied with.
8. "Underground Service Alert" (USA) 800-642-2444 and City Electrical Division 449-5287 shall be notified 48 hours prior to beginning work.

"SPECIAL PROVISIONS"

EXCAVATION PERMIT - CITY OF SACRAMENTO

Date July 26, 1984

Permit No. p-072784-1

The City Engineer of the City of Sacramento, under provisions of, and in accordance with, Ordinance No. 4250, 4th Series, adopted by the City Council of the City of Sacramento on the 10th day of July, 1979 does hereby grant permission to:

Agency Radian Corporation
3401 La Grande Blvd. 95823

Job No. _____

to make excavations as follows: (Location and description)

S & W side McClellan AFB

Exploration borings 5 1/8" diameter for soil & water testing.

RESTRICTIONS: See general provisions on reverse side of application for encroachment permit.

Eng. Dept. St. Maint
Form 3 (revised) 10/82

M. Johnson, Public Works Director
~~J. F. Varozza, City Engineer~~

BY *George Smith*
Street Maintenance Superintendent

RADIAN
CORPORATION

APPENDIX 5-B

Sacramento County Department of Health -
Drilling Permit

APPLICATION & WATER WELL JOB PERMIT

SACRAMENTO COUNTY
Department of Health

(916) 366-2101

ENVIRONMENTAL HEALTH BRANCH
3701 Branch Center Road
Sacramento, CA 95827

FOR OFFICE USE ONLY

Approved: ☒ Disapproved: ☐

By: _____ Date: 6-26-84

Receipt #: 06747 Permit #: 007409

Total Fee: \$90.- Date Issued: 6-26-84

(Permit expires 1 year from date issued)

Grout Inspection by: _____

Date: _____

Final Inspection By: _____

Date: _____

COMMENTS: _____

Application is hereby made to the County of Sacramento Health Officer
for a permit to perform work at the location as indicated below:

JOB LOCATION: Area Surrounding McClellan AFB PARCEL #: _____

NEAREST CROSS STREET: _____

OWNER'S NAME: _____ PHONE #: _____

OWNER'S ADDRESS: _____ CITY: _____

CONTRACTOR'S NAME: Water Development Corporation LICENSE #: 203326

ADDRESS: 220 N. East St. CITY: Woodland, CA PHONE #: (916) 562-2829

WORK TO BE PERFORMED:

- | | | |
|---|---|---|
| <input type="checkbox"/> Construct well (new) | <input type="checkbox"/> Install new pump | <input type="checkbox"/> Abandon well |
| <input type="checkbox"/> Deepen well | <input type="checkbox"/> Repair pump | <input checked="" type="checkbox"/> Other (state) |
| <input type="checkbox"/> Repair well (state work) | <input type="checkbox"/> Replace pump | <u>20 exploratory borings</u> |

COMMENTS: _____

DISTANCE TO NEAREST:

_____ Septic Tank system _____ Sewer line _____ Property line _____ Other well

INTENDED USE:

- ☐ Domestic/private
☐ Domestic/public
☐ Irrigation
☐ Industrial
☒ Other (state)

TYPE OF WELL

- ☐ Caele
☒ Drilled
☐ Driven
☒ Rotary Dual Tube Air
☐ Other (state)

CONSTRUCTION SPECIFICATIONS

Well depth 150 ft Diameter 5 1/8"
Gage of casing none Depth _____
Grout depth 15" ft. Type neat cement
Gravel Pack: Yes ☐ No ☒
Conductor: Yes ☐ No ☒

Exploratory

OTHER INFO: Solid Grout Seal

COMMENTS: Exploratory borings-will be cemented bottom to top after drilling

PUMP INSTALLATION/REPAIR: N/A

CONTRACTOR: _____

TYPE OF PUMP: _____ HP _____

WELL ABANDONMENT: Diameter: 5 1/8" Depth: 150 ft Material to be used: neat cement

COMMENTS: Cemented bottom to top after drilling

I hereby agree to comply to all Codes, Rules and Regulations of State of California and the County of Sacramento pertaining to or regulating well construction. Within ten (10) days after completion of work on a new well, I will furnish the County of Sacramento to Community Health Agency a Well Driller's Log Report and will notify them before putting the well in use. I WILL CALL FOR A GROUT INSPECTION PRIOR TO GROUTING AND FOR A FINAL INSPECTION.

SIGNED

Lo Wayne Pearce

TITLE

Hydrogeologist-Project Director
Radian Corporation

DRAW PLOT PLAN ON REVERSE SIDE

SHOW: parcel dimensions, adjacent streets, location of nearest septic tank system, location of nearest well, location of structures or any other information that would be pertinent.

APPLICATION & WATER WELL JOB PERMIT

SACRAMENTO COUNTY
Department of Health

(916) 366-2101

ENVIRONMENTAL HEALTH BRANCH
3701 Branch Center Road
Sacramento, CA 95827

FOR OFFICE USE ONLY

Approved: ☒ Disapproved: ☐
By: Steve K. K. Date: 6-26-84

Receipt # 56747 Permit # 007403
Total Fee: \$90 Date Issued: 6-26-84
(Permit expires 1 year from date issued)
Final Inspection By: _____ Date: _____

Grout Inspection by: _____
Date: _____

COMMENTS: _____

Application is hereby made to the County of Sacramento Health Officer
for a permit to perform work at the location as indicated below:

JOB LOCATION: Area Surrounding McClellan AFB PARCEL #: _____

NEAREST CROSS STREET: _____

OWNER'S NAME: _____ PHONE #: _____

OWNER'S ADDRESS: _____ CITY: _____

CONTRACTOR'S NAME Water Development Corporation LICENSE #: 283326

ADDRESS: 220 N. East St. CITY: Woodland, CA PHONE #: (916) 662-2829

WORK TO BE PERFORMED:

- | | | |
|---|---|---|
| <input type="checkbox"/> Construct well (new) | <input type="checkbox"/> Install new pump | <input type="checkbox"/> Abandon well |
| <input type="checkbox"/> Deepen well | <input type="checkbox"/> Repair pump | <input checked="" type="checkbox"/> Other (state) |
| <input type="checkbox"/> Repair well (state work) | <input type="checkbox"/> Replace pump | <u>20 exploratory borings</u> |

COMMENTS: 29 KK

DISTANCE TO NEAREST:

_____ Septic Tank system _____ Sewer line _____ Property line _____ Other well

INTENDED USE:

- ☐ Domestic/private
☐ Domestic/public
☐ Irrigation
☐ Industrial
☒ Other (state)

TYPE OF WELL

- ☐ Cable
☒ Drilled
☐ Driven
☒ Rotary Dual Tube Air
☐ Other (state)

CONSTRUCTION SPECIFICATIONS

Well depth 150 ft Diameter 5 1/8"
Gage of casing none Depth 20
Grout depth 150 ft Type neat cement
Gravel Pack: Yes ☐ No ☒
Conductor: Yes ☐ No ☒

Exploratory

OTHER INFO: Solid Grout Seal

COMMENTS: Exploratory borings-will be cemented bottom to top after drilling

PUMP INSTALLATION/REPAIR:

CONTRACTOR: N/A

TYPE OF PUMP: _____ HP _____ neat

WELL ABANDONMENT: _____ Diameter: 5 1/8" Depth: 150 ft Material to be used: cement

COMMENTS: Cemented bottom to top after drilling 20 KK

I hereby agree to comply to all Codes, Rules and Regulations of State of California and the County of Sacramento pertaining to or regulating well construction. Within ten (10) days after completion of work on a new well, I will furnish the County of Sacramento Community Health Agency a Well Driller's Log Report and will notify them before putting the well in use. I WILL CALL FOR A GROUT INSPECTION PRIOR TO GROUTING AND FOR A FINAL INSPECTION

SIGNED

Steve K. K.

TITLE

Hydrogeologist-Project Director
Radian Corporation

DRAW PLOT PLAN ON REVERSE SIDE

SHOW: parcel dimensions, adjacent streets, location of nearest septic tank system, location of nearest well, location of structures or any other information that would be pertinent

NOTE ACCOMPANYING DEPARTMENT OF HEALTH DRILLING PERMIT

Radian Corporation, under contract to the U.S. Air Force, is requesting a permit to drill ~~20~~^{29 K.K.} reconnaissance (exploratory) borings in the area surrounding McClellan Air Force Base. The borings will be drilled by our subcontractor, Water Development Corporation, by dual-tube air rotary methods and will be cemented from total depth (~~150~~^{200 K.K.} feet) to the surface as the drill stem is extracted.

An attached map shows the initial boring site locations. The actual locations will be dependent upon field conditions and property access.

At the completion of this drilling program, Radian will submit to the Health Department the locations of each boring, drillers logs, and information regarding the abandonment of each hole.

Signed: *William A. Prince*

Date: 19 June 1984

Title: Hydrogeologist - Project Director, Radian Corporation

DATE 6/21/84

SACRAMENTO COUNTY HEALTH DEPARTMENT
RECEIPT FOR FEES AND REPAYMENTS

RECEIPT NO. **E** 03747

RECEIVED FROM Radion Corp (\$ 90.00)

ninety & AND no 100 DOLLARS

CASH ☐ BY MONEY ORDER ☐ BY CHECK ☒ CHECK NO 1997 LOCATION McClellan AFB

ACCT. NO. _____

9290	ENVIRONMENTAL HEALTH	9790	9698
<input type="checkbox"/> PDF - DISPOSAL SITE	<input type="checkbox"/> STC - SEPTIC TANK CLEANER	<input type="checkbox"/> MIS - MISCELLANEOUS	<input type="checkbox"/> RCX - GRADE A DAIRIES
<input type="checkbox"/> AHX - FARM LABOR CAMP	<input type="checkbox"/> ABX - SEWAGE SYSTEM	<u>9613</u>	<input type="checkbox"/> REX - MILK PROCESSORS
<input type="checkbox"/> TEX - FOOD ESTABLISHMENT	<input type="checkbox"/> SWS - SMALL WATER SYSTEM	<input type="checkbox"/> SWF - WITNESS FEE	<input type="checkbox"/> RHX - MFG MILK DAIRIES
<input type="checkbox"/> IWC - INFECTIOUS WASTE	<input checked="" type="checkbox"/> ADX - WATER WELLS / PUMPS		<input type="checkbox"/> RKX - SOFT SERVE
<input type="checkbox"/> AEX - LOAN CERTIFICATIONS	<u>9643</u>		<input type="checkbox"/> RNX - NON-DAIRY DESSERT
<input type="checkbox"/> PHM - PERM OCCUPANCY HOTEL	<input type="checkbox"/> TPX - FOOD PLAN CHECK		
<input type="checkbox"/> ACX - POOL SERVICE CO	<input type="checkbox"/> ZBX - POOL PLAN CHECK		
<input type="checkbox"/> SCX - PUBLIC POOL	<u>9644</u>		
<input type="checkbox"/> GEX - REFUSE EXEMPTION	<input type="checkbox"/> NSE - NOISE ASSESSMENT		
	<input type="checkbox"/> MPR - MAP REVIEW		

SACRAMENTO COUNTY HEALTH DEPARTMENT
DIRECTOR OF HEALTH

BY R. Foster

FORM ACCTG HD 22 E (REV 9-83)

AD-A156 283

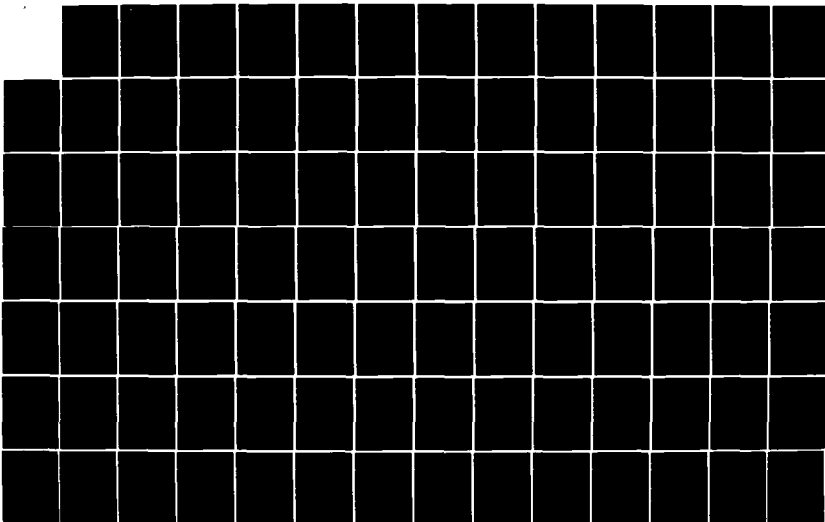
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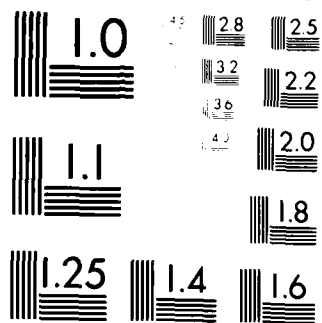
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MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

APPENDIX 5-C

Reconnaissance Boring Drilling Logs

Log of Drilling Operations

 Boring or Well No. RB-1
 Sheet 1 of 5

 Location Northeast of I and 34th St.

 Grid Cell 18:24

 Coordinates x 17,450'

 y 23,230'

 Project McClellan AFB IRP Phase II

 Beginning 9/5/84 and end

9/6/84 of drilling operation

 Sampling Interval (Estimated) Composite 5 (ft)

 Ground Level Elevation: apx. 82 ft. MSL (topo).

 Type Drill Rig and Operator Drill Tek D40K/S. Smith

 Log Recorded By R.A. Belan

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
0					Drilled by the dual tube air rotary method.
	G			SAND, SILT and CLAY: brown, smells organic, unconsolidated	OVM (ppm) 70
5					
	C			SAND and SILT: VF, tan dry, unconsolidated	12.5
10					
	C			CLAY: brown, dry (?), unconsolidated	66
15					
	C			SAND: Md-Fn, tan, unconsolidated	8.0
20					
	C			CLAY and SAND: brown, unconsolidated, dry, Cs-Fn	1.7
25					
	C			SAND: minor clay, tan, dry, unconsolidated	0.7
30					
	C			CLAY: plastic, brown, unconsolidated	0.8
35					
	C			CLAY: plastic, brown, unconsolidated	1.5
40					

Log of Drilling Operations

 Boring or Well No. RB-1
 Sheet 2 of 5

 Location Northeast of I and 34th St.
 Grid Cell 18:24
 Coordinates x 17,450'
 y 23,230'

 Project McClellan AFB IRP Phase II
 Beginning 9/5/84 and end 9/6/84 of drilling operation
 Sampling Interval (Estimated) Composite 5 (ft)
 Type Drill Rig and Operator Drill Tek D40K/S.Smith
 Log Recorded By R.A. Belan

 Ground Level Elevation: apx.82 ft.MSL (tono).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
40					
	C			CLAY: brown, plastic, unconsolidated	
45					
	C			CLAY: brown, plastic, unconsolidated	Driller cut w/water 13
50					
	C			CLAY: sand	41.9
55					
	C			CLAY: same	71.4
60					
	C			CLAY: same	64.0
65					
	C			CLAY: same	70.0
70					
	C			CLAY: same	12.0
75					
	C			CLAY: same	6.0
80					

Log of Drilling Operations

 Boring or Well No. RB-1
 Sheet 3 of 5

 Location Northeast of I and 34th St.
 Grid Cell 18:24
 Coordinates x 17,450'
 y 23,230'

 Project McClellan AFB IRP Phase II
 Beginning 9/5/84 and end 9/6/84 of drilling operation
 Sampling Interval (Estimated) Composite 5 (ft)
 Type Drill Rig and Operator Drill Tek D40K/S. Smith
 Log Recorded By R.A. Belan

 Ground Level Elevation: apx. 82 ft.MSL (tono).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
80					
	C			CLAY and SAND: brown, interbedded, unconsolidated	83
85					
	C			CLAY and SAND: same, gravel and sand at 89'	26.6
90					
	C			CLAY and SAND: same	50.5
95					
	C			CLAY and SAND: same	14.0
100					
	C			CLAY and SAND: same	19.8
105					
	C			GRAVEL, CLAY and SAND: brown, no free water, unconsolidated	Driller cut w/water 22.3
110					
	C			CLAY and SAND: brown, unconsolidated	Driller cut w/water 7.4
115					
	C			CLAY and SAND: same	WL: ~97', T°C=23°C C: 270, pH: 7.5
120					

Log of Drilling Operations

 Boring or Well No. RB-1
 Sheet 4 of 5

 Location Northeast of I and 34th St.
 Grid Cell 18:24
 Coordinates x 17,450'
 y 23,230'

 Project McClellan AFB IPP Phase II
 Beginning 9/5/84 and end
9/6/84 of drilling operation

 Ground Level Elevation: apx. 82 ft. MSL (tomo).

 Sampling Interval (Estimated) Composite 5 (ft)
 Type Drill Rig and Operator Drill Tek D40K/S. Smith
 Log Recorded By R.A. Belan

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
120					-0.2 (background)
	C			CLAY and SAND: interbedded, tan to brown, Fn-VF, unconsolidated, no free water	
125					
	C			SAND: FN-VF, dry (?), unconsolidated	0.1
130					
	C			SAND and CLAY: same	0.1
135					
	C			SAND and CLAY: interbedded	No obvious water from cuttings. WL: 110' BGL, T=23°C. C: 160, pH: 7.4
140					
	C			CLAY and SILT: interbedded, tan, dry(?) unconsolidated, no free water	
145					
	C			CLAY and SAND: tan, hard, dry (?), unconsolidated	Driller cut w/water 1.4
150					
	C			CLAY: brown, hard, unconsolidated	Driller cut w/water 3.0
155					
	C			CLAY and SAND: interbedded, brown, unconsolidated	5.7 No obvious water WL: 127' BGL, T=23°C C: 230, pH: 7.5
160					

Log of Drilling Operations

 Boring or Well No. RB-1
 Sheet 5 of 5

 Location Northeast of I and 34th St.
 Grid Cell 18:24
 Coordinates x 17,450'
 y 23,230'

 Project McClellan AFB IRP Phase II
 Beginning 9/5/84 and end 9/6/84
9/6/84 of drilling operation

 Sampling Interval (Estimated) Composite 5 (ft)

 Ground Level Elevation: apx.82 ft.MSL (tono).

 Type Drill Rig and Operator Drill Tek D40K/S.Smith
 Log Recorded By R.A. Belan

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
160					0.3 (background)
	C			SILT and SAND: minor clay, tan, dry(?) no visible water, unconsolidated	2.4
165					
	C			CLAY: brown, dry, hard, unconsolidated	Driller cut w/water 1.5
170					
	C			CLAY: brown, hard, dry, unconsolidated	1.7
175					
	C			CLAY: brown, hard, dry, unconsolidated	2.6
180		RB-1-4			Driller cut w/water WL: 122'BGL, T: 21°C C: 170, pH: 7.4
	C			SAND: Cs-Md, mottled, black to tan, water produced, ang-subang, clear quartz grains, white grains (shells?)	30.5
185					
	C			SAND: same	2.1
190					
	C			CLAY: brown, hard, dry, unconsolidated	4.4 23.6
195				SAND and CLAY: interbedded, brown, water, unconsolidated	WL: 132'BGL, T=21°C C: 180, pH: 7.8
	C				Grouted hole through dual tubes w/ sacks Portland Cement Type I & II
200		RB-1-5		Total Depth: 200 Feet	

Log of Drilling Operations

 Boring or Well No. RB-2
 Sheet 1 of 5

 Location _____
 Grid Cell 9, 20
 Coordinates x 8075
 y 19750

 Project McClellan AFB IRP Phase II
 Beginning 8-14-84 and end 8-15-84 of drilling operation
 Sampling Interval (Estimated) Composite 5 (ft)
 Type Drill Rig and Operator Drillsystem 1000 CSR/
 Log Recorded By T. Walters L. Holtort

 Ground Level Elevation: 55 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
0				Surface Casing	Drilled by the dual tube air rotary method.
5					0.0
	C			SILT: Moist, brown, fine grained	0.0
10					
	C			Same as above	0.0
15					
	C			SILT: Fine, yellow-brown, powder	0.0
20					0.5
	C			CLAY: Silty, poor plasticity	Injecting H ₂ O
25					2.5
	C			CLAY: Silty, yellow, poor plasticity	
30					1.7
	C			SILT: With minor clay, yellow-brown	
35					0.4
	C			CLAY: Silty, brown, poor plasticity	
40					

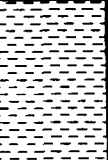
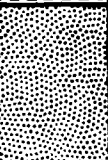
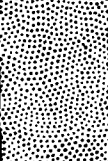

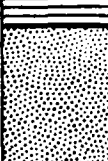
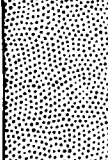

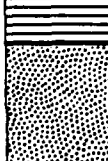
Log of Drilling Operations

 Boring or Well No. RB-2
 Sheet 2 of 5

 Location _____
 Grid Cell _____
 Coordinates x _____
 y _____

 Project McClellan AFB IRP Phase II
 Beginning _____ and end _____
 _____ of drilling operation
 Sampling Interval (Estimated) Composite 5 (ft)
 Type Drill Rig and Operator Drillsystem 1000 CSR/
 Log Recorded By T. Walters L. Holtorf

 Ground Level Elevation: 55 ft.MSL (tomo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
40					
	C			SILT: Sandy, unconsolidated, poorly sorted, sand 25%	0.4
45					
	C			SAND: Silty, poorly sorted, brown unconsolidated	0.3
50					
	C			SAND: Micaceous, with brown clay, interbedded	0.5
55					
	C			CLAY: Silty, good plasticity, brown	0.6
60					
	C			SAND: Silty, moist, possible perched water, 60'-61'	0.5
65					
	C			SAND: Silty, with minor clay, out of perched zone	0.6
70					
	C			CLAY: Silty, fair plasticity	0.9
75					
	C			SAND: Clayey, clay 10%, brown, sand medium grained, cemented	2.1
80					

Log of Drilling Operations

 Boring or Well No. RB-2
 Sheet 3 of 5

 Location _____
 Grid Cell _____
 Coordinates x _____
 y _____

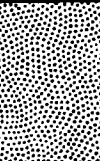
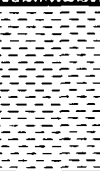
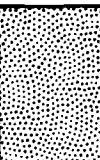
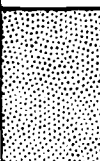
 Project McClellan AFB IPP Phase II
 Beginning _____ and end _____
 _____ of drilling operation

 Sampling Interval (Estimated) Composite 5 (ft)

 Ground Level Elevation: 55 ft.MSL (topo).

 Type Drill Rig and Operator Drillsystem 1000 CSR

 Log Recorded By T. Walters / L. Holtorf

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
80	C			SAND: Hard, cemented, clay matrix	2.2
85	C			SILT: Sandy, losing circulation and cutting into formation	0.9 Lost circulation
90	C			No return, lost circulation	Lost circulation
95	C			No return, lost circulation	
100	C			No return, lost circulation	Water sample 3.2 pH = 6.0 Conductivity = 230 Temperature = 23°C
105	C			SAND: Clayey with some coarse gravel stringers	
110	C			No sample	
115	C			SAND: Silty, poorly sorted quartz, subangular, clear-yellow	0.9
120	C			SAND: fine-medium grained, poorly sorted	±25 gpm 0.4

Log of Drilling Operations

 Boring or Well No. RB-2
 Sheet 4 of 5

 Location _____
 Grid Cell _____
 Coordinates x _____
 y _____

 Project McClellan AFB IRP Phase II
 Beginning _____ and end _____
 _____ of drilling operation
 Sampling Interval (Estimated) Composite 5 (ft)

 Ground Level Elevation: 55 ft.MSL (tomo).

 Type Drill Rig and Operator Drillsystem 1000 CSR
 Log Recorded By T. Walters / L. Holtort

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
120					0.9
	C			SAND: Clayey, sand is fine grained, moderately sorted	Lost circulation 125'
125					1.0
	C			CLAY: Yellow-brown, very good plasticity	
130					0.3
	C			SAND: Coarse, poorly sorted with clay stringer 134'-135'	±25 gpm
135					0.4
	C			CLAY: Sandy, water bearing	Water sample pH = 7.5 Conductivity = 200 Temperature = 19°C Water clear
140					0.7
	C			SAND: Very coarse, poorly sorted with minor gravel	±25 gpm
145					0.8
	C			SAND: Coarse, poorly sorted with clay stringer 149'-150'	0.6
150					
	C			SAND: Fine-medium grained, quartz subangular, clear-yellow, clay 154'	0.6
155					
	C			SAND: Cemented - 155'-159'; Clay - 159'-160'; Sand - 160'	Water sample pH = 7.8 Conductivity = 210 Temperature = 18°C
160					

Log of Drilling Operations

 Boring or Well No. 3
 Sheet 1 of 5

 Location _____
 Grid Cell 6, 20
 Coordinates x 5600
 y 19800

 Project McClellan AFB IRP Phase II
 Beginning _____ and end _____
 of drilling operation

 Sampling Interval (Estimated) Composite 5 (ft)

 Ground Level Elevation: 55 ft.MSL (tono).

 Type Drill Rig and Operator Chicago Pneumatic CP2000
 Log Recorded By W. Boettner B. Horst

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
0					ovm(ppm)
	C			SILT: Sandy, fine to very fine, angular to subangular, tan	0.0
5					
	C			SAND: Silty, clayey, fine grain, tan to brown	0.0
10					
	C			SILT: Sandy, clayey, fine to very fine, red brown	0.04
15					
	C			SAND: Silty, clayey, fine to very fine grain, subangular to subrounded, clay increasing with depth, brown	0.0
20					
	C			SAND: Clayey, fine to very fine grain, subangular to subrounded, clay increasing with depth, brown	0.0
25					
	C			SAND: Clayey, fine to medium grain, subangular to subrounded, brown	0.0
30					
	C			SAND: silty, medium to coarse grain, brown	0.0
35					
	C			SAND: Medium grain, trace of silt, clay, brown	0.0
40					

Log of Drilling Operations

 Boring or Well No. 3
 Sheet 2 of 5

 Location _____
 Grid Cell _____
 Coordinates x _____
 y _____

 Project McClellan AFB IRP Phase II
 Beginning _____ and end _____
 _____ of drilling operation
 Sampling Interval (Estimated) Composite 5 (ft)
 Type Drill Rig and Operator Chicago Pneumatic CP2000
 Log Recorded By W. Boettner B. Horst

 Ground Level Elevation: 55 ft.MSL (tomo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
40					
	C			SAND: Silty, clayey, medium to fine grain, brown	0.0
45					
	C			SAND: Silty, gravelly, medium to coarse grain, subrounded to rounded, brown	0.0
50					
	C			SAND: Medium grain, clean	0.0
55					
	C			SAND: Clayey, fine to medium grain, dark brown	0.0
60					
	C			CLAY: Silty, micaceous, brown	0.0
65					
	C			CLAY: Silty, micaceous, brown	0.0
70					
	C			CLAY: Silty, micaceous, brown	0.0
75					
	C			CLAY: Silty, sandy, highly plastic	0.0
80					

Log of Drilling Operations

 Boring or Well No. 3
 Sheet 3 of 3

 Location _____
 Grid Cell _____
 Coordinates x _____
 y _____

 Project McClellan AFB APD Phase II
 Beginning _____ and end _____
 _____ of drilling operation
 Sampling Interval (Estimated) Composite (ft)

 Ground Level Elevation: 55 ft.MSL (topo).

 Type Drill Rig and Operator Chicago Pneumatic CP-10
 Log Recorded By W. Boettner AB rst

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
80					
	C			SAND: Silty, clayey, fine to very fine grain, brown	0.0
85					
	C			SAND: Gravelly, clayey, silty, medium to coarse grain, subround to round	0.0
90					
	C			SAND: Silty, fine to very fine grain, brown	0.0
95					
	C			SAND: Silty, fine to very fine, tan water	0.0 Water sample at 100' pH=4.3 Cond. = 200 Temperature = 22°C
100					
	C			SAND: Silty, water	0.0
105					
	C			SAND: Silty, very fine grain, tan	0.0
110					
	C			GRAVEL: Sandy, silty, tan to brown	0.0
115					
	C			SAND: Gravelly, silty, medium to coarse grain, brown	0.0
120					

Log of Drilling Operations

 Boring or Well No. 3
 Sheet 4 of 5

 Location _____
 Grid Cell _____
 Coordinates x _____
 y _____

 Project McClellan AFB IEP Phase II
 Beginning _____ and end _____
 _____ of drilling operation

 Ground Level Elevation: 55 ft. MSL (topo).

 Sampling Interval (Estimated) Composite 5 (ft)
 Type Drill Rig and Operator Chicago Pneumatic CP200
 Log Recorded By W. Boettner B. Horst

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
120	C			SAND: Silty, very fine grain, brown	0.0
125	C			SAND: Gravelly, silty, fine to medium grain, brown	0.0
130	C			CLAY: Gravelly, sandy, high plasticity, brown	0.0
135	C			SAND: Clayey, FeO _x staining, Red brown	0.04
140	C			SAND: Silty, fine to very fine grain	0.04
145	C			SAND: Silty, fine to very fine grain	0.02
150	C			SAND: Silty, sparse gravels, fine to very fine	0.01
155	C			SAND: Silty, medium to fine grain, brown	0.01
160	C				Water sample at 160' pH = 4.7 Temperature = 18°C Conductivity = 200

Log of Drilling Operations

 Boring or Well No. 3
 Sheet 5 of 5

 Location _____
 Grid Cell _____
 Coordinates x _____
 y _____

 Project McClellan AFB IFP Phase II
 Beginning _____ and end _____
 _____ of drilling operation

 Sampling Interval (Estimated) Composite 5 (ft)

 Ground Level Elevation: 55 ft. MSL (tomo).

 Type Drill Rig and Operator Chicago Pneumatic CP2000
 Log Recorded By B. Roettger B. Horst

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
160	C			SAND: Medium to coarse grain, FeO _x staining, brown	0.02
165	C			SAND: Clayey, silty, fine to medium grain, plastic, brown	0.02
170	C			SAND: Silty, Clayey, fine to medium grain, somewhat plastic, brown	0.04
175	C			SAND: Silty, medium to coarse grain	0.02 Water sample at 180' pH = 5.6 Temperature = 20°C Conductivity = 190
180	C			SAND: Clayey, micaceous, fine to very fine grain, red brown	0.04
185	C			SAND: Micaceous, fine to very fine grain, reddish brown	0.02
190	C			SAND: Micaceous, clayey, fine grain, clay increasing with depth, red brown	0.01
195	C			CLAY: Sandy, fine to very fine, slightly micaceous, brown	0.01
200	C			Total Depth: 200 Feet	0-200' 4 1/2" hole Grouted hole through dual tubes w 29 sacks Portland Cement Type I & II

Log of Drilling Operations

 Boring or Well No. RB-4
 Sheet 1 of 5

 Location _____
 Grid Cell 9:19
 Coordinates x 8535'
 y 18875'

 Project McClellan AFB IRP Phase II
 Beginning _____ and end _____
 _____ of drilling operation
 Sampling Interval (Estimated) Composite 5 (ft)
 Type Drill Rig and Operator Drillsystem 1000 CSR/
 Log Recorded By T. Walters M. Holtorf

 Ground Level Elevation: 53 ft.MSL (tomo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
0				Surface; plaster from blow-out preventer	Drilled by the dual tube air rotary method.
5					0.1
10	C			SILT: Brown, with minor clay	0.1
15	C			SILT: Clayey, dark brown	0.1
20	C			CLAY: Silty, dark brown, moist, becoming siltier with depth	0.1
25	C			SAND: Fine-coarse, poorly sorted, dark brown	0.1
30	C			CLAY: Silty, with several sand stringers, cuttings grey-brown, possible contamination	0.1
35	C			SILT: Clayey, cemented	7.5
40	C			SAND: Fine-medium grained, micaceous	Contact, sharp 0.1

Log of Drilling Operations

 Boring or Well No. RB-4
 Sheet 2 of 5

 Location _____
 Grid Cell 9:19
 Coordinates x 8535'
 y 18875'

 Project McClellan AFB IRP Phase II
 Beginning _____ and end _____
 _____ of drilling operation
 Sampling Interval (Estimated) Composite 5 (ft)
 Type Drill Rig and Operator Drillsystem 1000 CSR/
 Log Recorded By T. Walters L. Holtort

 Ground Level Elevation: 53 ft.MSL (toro).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
40					0.2
	C			SILT: Yellow-brown, cemented	
45					0.2
	C			SILT: Hard (cemented) with clay, 25% yellow-brown	
50					0.1
	C			SILT: Sandy, fine grained, yellow-brown, sand 25%	
55					0.1
	C			SAND: Fine grained, coffee brown, oxidized, distinct unit	
60					0.2
	C			CLAY: Tan-brown, very good plasticity	
65					0.2
	C			SAND: Silty, poorly sorted, fine-medium grained	
70					0.1
	C			CLAY: Grey, good plasticity	
75					
	C			No sample	--
80					

Log of Drilling Operations

 Boring or Well No. RB-4
 Sheet 3 of 5

 Location _____
 Grid Cell 9:19
 Coordinates x 8535'
 y 18875'

 Project McClellan AFB IRP Phase II
 Beginning _____ and end _____
 _____ of drilling operation
 Sampling Interval (Estimated) Composite 5 (ft)
 Type Drill Rig and Operator Drillsystem 1000 CSR
 Log Recorded By T. Walters L. Holtorf

 Ground Level Elevation: 53 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
80					
	C			CLAY: Brown, good plasticity	0.1
85					
	C			Same as above	0.3
90					
	C			CLAY: Silty, dark brown, silt 25%	0.3
95					
	C			SAND: Fine-medium grained, micaceous, poorly sorted, quartz subangular	0.2 Water sample at 98' pH = 9.5 Conductivity = 300 Temperature = 23°C
100					
	C			CLAY: With gravel, gravel poorly sorted, subangular, clay very plastic, fining downward	0.1
105					
	C			CLAY: With coarse sand, silt 106', interbedded, sand, subangular, poorly sorted	0.4
110					
	C			CLAY: Dark brown, very good plasticity	2.0
115					
	C			CLAY: Silty, brown, sand stringer 119'	1.1
120					

Log of Drilling Operations

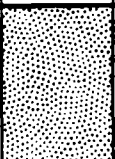


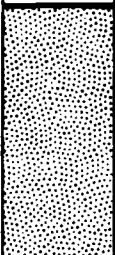
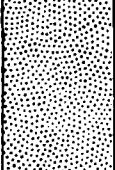
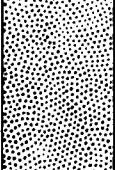
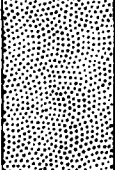

 Boring or Well No. RB-4
 Sheet 1 of 1

 Location _____
 Grid Cell 9:19
 Coordinates x 8535'
 y 18875'

 Project McClellan AFB IED Phase II
 Beginning _____ and end _____
 _____ of drilling operation

 Ground Level Elevation: 53 ft. MSL (topo).

 Sampling Interval (Estimated) Composite (ft)
 Type Drill Rig and Operator Drillsystem 1000 CSR
 Log Recorded By L. Walters / L. H. H. H.

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
120	C			SAND: Clayey, clay 15%, interbedded	0.1
125	C			No sample	--
130	C			CLAY: Silty, light brown, fair plasticity	--
135	C			SAND: Silty with minor clay, water-bearing	0.0 Water sample ±10gpm pH 9.0 Conductivity-210 Temperature-19°C
140	C			SAND: Coarse, with clay, clay 25%, sand poorly sorted	0.0
145	C			SAND: Coarse, with minor clay, sand, poorly sorted, clay zone fairly confining	0.0
150	C			SAND: Clayey, interbedded, sand is water-bearing, clay confining, sand stringer 153'-154', confining clay 155'	0.0 Lost circulation 154'
155	C			SAND: Fine-medium grained, some clay not plastic, making water	0.0 Water sample-V. Muddy pH = 7.8 Conductivity = 200 Temperature = 18°C
160					

Log of Drilling Operations

 Boring No. RB-4
 Sheet 5 of 5

 Location _____
 Grid Cell 9:19
 Coordinates x 8535'
 y 18875'

 Project McClellan AFB IRP Phase II
 Beginning _____ and end _____
 _____ of drilling operation

 Ground Level Elevation: 53 ft.MSL (mono).

 Sampling Interval (Estimated) Composite 5 (ft)
 Type Drill Rig and Operator Drillsystem 1000 CSR/
 Log Recorded By T. Walters / L. Holtorf

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
160	C			SAND: Micaceous, quartz, clear-yellow, fine-medium grained, subrounded	0.0 Major aquifer ±100 gpm
165	C			Same as above	0.0
170	C			Same as above	0.0
175	C			Same as above	0.0
180	C			Same as above	0.0
185	C			SAND and CLAY: interbedded, clay fairly plastic, sand, fine-medium grained	0.0
190	C			SAND and CLAY: increase in clay 50% each, clay brown, plastic, sand fine-coarse grained, coarse sand 190'	0.0 Lost circulation 187'
195	C			SAND with CLAY: Sand 80%, Clay 20%, clay yellow-brown SAND and CLAY	0.0 ±100 gpm Water sample pH = 7.5 Conductivity = 210 Temperature = 18°C Grout hole through dual tubes w/ sticks Portland Cement Type 1 & 11
200	C			Total Depth: 200 Feet	0.0

Log of Drilling Operations

 Boring or Well No. RB-5
 Sheet 1 of 6

 Location _____
 Grid Cell 9,18
 Coordinates x 8500
 y 17900

 Project McClellan AFB IRP Phase II
 Beginning 8-10-84 and end 8-11-84 of drilling operation
 Sampling Interval (Estimated) Composite 5 (ft)
 Type Drill Rig and Operator Drillsystem 1000 CSR/
 Log Recorded By T. Walters L. Holtort

 Ground Level Elevation: 57 ft.MSL (tomo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
0				Surface plaster, from blow-out prevention	Drilled by the dual tube air rotary method.
5					
	C			SILT: Unconsolidated, tan-brown	0.2
10					
	C			CLAY: Silty, tan, silt fine grain	0.2
15					
	C			SILT: Sandy, poorly sorted, brown, with stringers of clay	0.3
20					
	C			SILT: Sandy, poorly sorted, brown, sand is fine-medium grained 25%	0.4
25					
	C			CLAY: Silty, good plasticity, clay balling up, silt 25%	0.4 Injecting H ₂ O, losing circulation
30					
	C			CLAY: Silty, brown, silt 25%, inter-bedded	0.4
35					
	C			CLAY: Silty, brown, silt 25%, same as above	0.7
40					

Log of Drilling Operations

 Boring or Well No. RB-5
 Sheet 2 of 6

 Location _____
 Grid Cell _____
 Coordinates x _____
 y _____

 Project McClellan AFB IRP Phase II
 Beginning _____ and end _____
 _____ of drilling operation
 Sampling Interval (Estimated) Composite 5 (ft)
 Type Drill Rig and Operator Drillsystem 1000 CSR/
 Log Recorded By T. Walters L. Holtort

 Ground Level Elevation: 57 ft.MSL (toro).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
40					0.3
	C			CLAY: Silty, same as above, silt 25%, coarsening downward	
45					0.3
	C			CLAY: Silty, silt brown, 25% clay, dark brown, good plasticity	Very slow drilling
50					0.3
	C			SAND: Silty, poorly sorted, yellow-brown, fine-medium grained	
55					0.3
	C			CLAY: Silty, with minor sand, poorly sorted sand, interbedded with clay and silt	
60					0.3
	C			SILT: Yellow-brown, no clay visible	
65					0.2
	C			SILT: Same as above, with trace clay, fining downward	
70					0.2
	C			CLAY: Silty, brown	
75					0.2
	C			SAND: Micaceous, fine-medium grained, moderately sorted, moist	Dropped waterline, dry
80					

Log of Drilling Operations

 Boring or Well No. RB-5
 Sheet 3 of 6

 Location _____
 Grid Cell _____
 Coordinates x _____
 y _____

 Project McClellan AFB IPP Phase II
 Beginning _____ and end _____
 _____ of drilling operation

 Ground Level Elevation: 57 ft.MSL (tore).

 Sampling Interval (Estimated) Composite 5 (ft)
 Type Drill Rig and Operator Drillsystem 1000 CSR
 Log Recorded By T. Walters L. Holtort

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
80					
	C			CLAY: Silty, brown, silt 25%	0.3
85					
	C			CLAY: Silty, yellow, silt 35%	0.3
90					
	C			CLAY: Grey-brown, good plasticity	0.3
95					
	C			CLAY: Silty, dark grey, stained with petroleum, very strong odor in cuttings	Water 98' pH = 6.9 Conductivity = 910 Temperature = 21°C AID 17.0 ppm
100					
	C			CLAY: Same as above	0.4
105					
	C			CLAY: Silty	0.4
110					
	C			CLAY: Sandy	0.4
115					
	C			CLAY: Silty, yellow, silt 25%, clay fair plasticity	Water 120' pH = 7.5 75.0 Conductivity = 210 Temperature = 19°C
120					

Log of Drilling Operations

 Boring or Well No. RB-5
 Sheet 1 of 6

 Location _____
 Grid Cell _____
 Coordinates x _____
 y _____

 Project McClellan AFB IRP Phase II
 Beginning _____ and end _____
 _____ of drilling operation

 Sampling Interval (Estimated) Composite 5 (ft)

 Ground Level Elevation: 57 ft.MSL (toro).

 Type Drill Rig and Operator Drillsystem 1000 CSR
 Log Recorded By T. Walters / L. Holt

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
120					
	C			CLAY: Silty, same as above, yellow, strong petroleum odor in cuttings	0.6
125					
	C			CLAY: Silty, yellow-brown, fair plasticity	0.1
130					
	C			Same as above	0.1
135					
	C			SAND: Silty, poorly sorted, fine-medium grained, water bearing	Water sample Water 140' pH = 7.5 0.1 Conductivity = 400 Temperature = 18°C
140					
	C			SAND: Coarse, subangular, quartz clear and yellow, Biotite 5%, lithic frag. 10%	0.1
145					
	C			SAND and GRAVEL: Same as above, coarsening downward	0.1
150					
	C			Same as above	0.1
155					
	C			Same as above	0.1
160					

Log of Drilling Operations

 Boring Well No. RB-5
 Sheet 1 of 6

 Location _____
 Grid Cell _____
 Coordinates x _____
 y _____

 Project McClellan AFB IRP Phase II
 Beginning _____ and end _____
 _____ of drilling operation
 Sampling Interval (Estimated) Composite 5 (ft)
 Type Drill Rig and Operator Drillsystem 1000 CSR/
 Log Recorded By T. Walters L. Holtort

 Ground Level Elevation: 57 ft.MSL (tomo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
160	C			CLAY: Silty, confining, fair plasticity	0.5
165	C			CLAY: Silty, with minor sand, inter-bedded, silt 20%, sand 10%	±10 gpm 0.5
170	C			SAND: Medium grained, with clay, brown, clay 10%	±50 gpm 0.5
175	C			SAND: Medium-coarse grained, poorly sorted with clay matrix, 10%. Lithic fragments 10%	Sieve = silt Water sample 0.5 pH 7.8 Conductivity = 210 Temperature = 18°C
180	C			CLAY: Yellow, confining, fair plasticity, gummy	0.3
185	C			Same as above. Coarsening downward, increase in silt w/depth	0.4
190	C			CLAY: Sandy, light brown	0.3 Water sample Good contact 195' pH = 8.9 Conductivity = 300 Temperature = 18°C
195	C			SAND: Coarse, poorly sorted, micaceous, highly oxidized, quartz clean, sub-angular	0.3
200					

Location _____
Grid Cell _____
Coordinates x _____
 y _____

Project McClellan AFB IDP Phase II
Beginning _____ and end _____

_____ of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)

Ground Level Elevation: 57 ft. MSL (topo).

Type Drill Rig and Operator Drillsystem 1000 CSR
Log Recorded By L. Walters L. Holtorf

[illegible]

Log of Drilling Operations

 Boring or Well No. RB-6
 Sheet 1 of 6

 Location _____
 Grid Cell 9, 18
 Coordinates x 8375
 y 17375

 Project McClellan AFB IRP Phase II
 Beginning 8-9-84 and end
8-9-84 of drilling operation
 Sampling Interval (Estimated) Composite 5 (ft)
 Type Drill Rig and Operator Drillsystem 1000 CSR/
 Log Recorded By T. Walters L. Holtort

 Ground Level Elevation: 57 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
0					Drilled by the dual tube air rotary method.
	C			SOIL: Unconsolidated	0.5
5					0.5
	C			CALICHE: White, with topsoil	
10					0.5
	C			SAND: Silty, brown, poorly sorted	
15					0.5
	C			SAND: Silty, loosely consolidated, poorly sorted, medium - coarse grained, moist, fining downward	0.5
20					
	C			SAND: Silty, light brown, fine grained, fining downward	
25					0.5
	C			SAND: Silty, dark brown, very fine	
30					0.5
	C			SAND: Silty, fine-medium grained, mod- well sorted	
35					
	C			SAND: Silty, poorly sorted	0.6

Location _____
Grid Cell _____
Coordinates x _____
 y _____

Project McClellan AFB IRP Phase II
Beginning _____ and end _____
_____ of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Drillsystem 1000 CSR
Log Recorded By T. Walters L. Holtort

Ground Level Elevation: 57 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
40					
	C			SAND: Poorly sorted, fine-medium grained, brown	0.6
45					
	C			SAND: Fine-medium grained, grading down to yellow silt, 46-50 fining downward	0.5
50					
	C			SILT: Yellow, extremely fine "flour" texture	0.5
55					
	C			CLAY: Silty, slightly moist, "flour"	0.5
60					
	C			CLAY: Silty, red-brown, more oxidized than above unit	0.5
65					
	C			CLAY: Red, silty, same as above	0.5
70					
	C			SILT: Tan, similar to silt from above 46-50	0.5
75					
	C			SILT: Dark brown, cemented, with clay stringers	0.5
80					

Log of Drilling Operations

 Boring or Well No. RB-6
 Sheet 3 of 6

 Location _____
 Grid Cell _____
 Coordinates x _____
 y _____

 Project McClellan AFB IPP Phase II
 Beginning _____ and end _____
 _____ of drilling operation
 Sampling Interval (Estimated) Composite 5 (ft)
 Type Drill Rig and Operator Drillsystem 1000 CSR
 Log Recorded By T. Walters M. Holtort

 Ground Level Elevation: 57 ft.MSL (toro).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
80					
	C			CLAY: Dark brown, fairly plastic, slightly moist	0.6
85					
	C			SILT and CLAY: Mixed, yellow	0.6
90					
	C			CLAY: Sandy, sand is water-bearing, clay is confining	0.6
95					
	C			SAND: Clayey, water at 95', sand fine-medium grained, clay red-brown	0.6 Water sample Water 95' pH = 6.9 Conductivity = 210 Temperature = 24°C
100					
	C			CLAY: Yellow, very good plasticity, confining	0.6
105					
	C			CLAY: Yellow, same as above	0.6
110					
	C			CLAY: Yellow, grading to sandy clay 114'-115'	0.6
115					
	C			CLAY: Silty, brown	Lost circulation
120					

Log of Drilling Operations

 Boring or Well No. RB-6
 Sheet 4 of 6

 Location _____
 Grid Cell _____
 Coordinates x _____
 y _____

 Project McClellan AFB IRP Phase II
 Beginning _____ and end _____
 _____ of drilling operation

 Sampling Interval (Estimated) Composite (ft)

 Ground Level Elevation: 57 ft. MSL (topo).

 Type Drill Rig and Operator Drillsystem 1000 USA

 Log Recorded By _____

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
120					
	C			CLAY and SAND: Interbedded, poorly sorted, sand producing ± 10 gpm	0.4
125					0.4
	C			CLAY: Yellow, silty, poor plasticity	0.4
130					0.4
	C			SAND and GRAVEL: Coarse grained, poorly sorted, subangular quartz	0.4
135					0.4
	C			GRAVEL: Poorly sorted, subangular quartz, lithic 10%	Water sample pH = 7.9 Conductivity = 300 Temperature = 18°C
140					0.3
	C			SAND: Coarse, dark brown, micaceous, poorly sorted	0.3
145					0.3
	C			SAND and GRAVEL: Poorly sorted, lithic fragments 10-15%, quartz clear, yellow	0.3
150					0.3
	C			CLAY: Grey, confining, sharp contact with above unit	
155					
	C			SAND: Brown, fine-medium grained with clay matrix, muddy	0.3
160					

Log of Drilling Operations

 Boring or Well No. RB-6
 Sheet 5 of 6

 Location _____
 Grid Cell _____
 Coordinates x _____
 y _____

 Project McClellan AFB IDP Phase II
 Beginning _____ and end _____
 _____ of drilling operation

 Sampling Interval (Estimated) Composite 5 (ft)

 Ground Level Elevation: 57 ft.MSL (topo).

 Type Drill Rig and Operator Drillsystem 1000 CSR
 Log Recorded By T. Walters / L. Holtorf

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
160					0.3
	C			CLAY: Silty, brown, fair plasticity	±25 gpm
165					0.1
	C			SAND: Micaceous, fine-medium grained, moderately sorted with oxidized water	
170					0.3
	C			SAND: Micaceous, finer than above unit, highly oxidized	
175					0.3
	C			CLAY: Yellow, fair plasticity	Water sample pH = 9.0 Conductivity = 200 Temperature = 19°C
180					0.3
	C			CLAY: Yellow-grey, confining, out of water	
185					0.3
	C			SAND: Fine-medium, muddy, 25% clay matrix	
190					0.3
	C			CLAY: Yellow, confining, out of water	±10 gpm
195					Water sample pH = 9.8 0.8 Conductivity = 210 Temperature = 18°C
	C			SAND: Coarse, poorly sorted, fine-coarse grained	
200					

Location _____
Grid Cell _____
Coordinates x _____
 y _____

Project McClellan AFB IRP Phase II
Beginning _____ and end _____
_____ of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Drillsystem 1000 CSR,
Log Recorded By T. Walters N. Holtort

Ground Level Elevation: 57 ft.MSL (topo).

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Log of Drilling Operations

 Soring or Well No. RB-7
 Sheet 1 of 5

 Location _____
 Grid Cell 9, 17
 Coordinates x 8635
 y 16.810

 Project McClellan AFB IRP Phase II
 Beginning 5 August 1984 and end
6 August 1984 of drilling operation
 Sampling Interval (Estimated) Composite 5 (ft)
 Type Drill Rig and Operator Drillsystem 1000 CSR/
 Log Recorded By T. Walters L. Hiltort

 Ground Level Elevation: 55 ft.MSL (toro).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
0					Drilled by the dual tube air rotary method.
5	C			SILT; light brown, w/2' topsoil.	0.2
10	C			SILT; light brown, moist, some unconsolidated rock fragments.	0.2
15	C			SAND; poorly sorted, loosely consolidated, 10% lithic fragments.	0.2
20	C			SAND; silty with gray clay galls, lt. brown, moderately sorted.	0.1
25	C			CLAY; silty, with stringers of sand, brown, clay 75%, sand 25%.	0.1
	C			CLAY; silty, trc. sand becoming sandy clay with depth.	0.0
				Increase sand 30-35'.	0.0
				CLAY; sandy, dark brown, sand poorly sorted, clay red-brown.	0.0

Log of Drilling Operations

 Boring or Well No. RB-7
 Sheet 2 of 5

 Location _____
 Grid Cell 9, 17
 Coordinates x 8635
 y 16,810

 Project McClellan AFB IRP Phase II
 Beginning 5 August 1984 and end
6 August 1984 of drilling operation
 Sampling Interval (Estimated) Composite 5 (ft)
 Type Drill Rig and Operator Drillsystem 1000 CSR/
 Log Recorded By T. Walters M. Holtart

 Ground Level Elevation: 55 ft. NSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
40					
	C			CLAY; tan, slightly moist very little sand, fine grained.	0.2
45					
	C			SAND; very well sorted, well rounded, brown, quartz 70% lithics 30%.	0.2
50					
	C			SAND; clayey, interbedded, clay 55-56'; sand 56-60' clay dark brown, fair plasticity.	0.4
55					
	C			CLAY; red silty, fining downward.	0.2
60					
	C			CLAY; light tan, good plasticity, gummy, very little sand.	0.8
65					
	C			CLAY; tan, fair plasticity, trace sand, fine grained.	0.8
70					
	C			SAND; silty, brown, with silt 35%, clay 10%.	0.8
75					
	C			CLAY; brown silty, silt 20%, clay 80%.	0.8
80					

Log of Drilling Operations

 Boring or Well No. RB-7
 Sheet 3 of 5

 Location _____
 Grid Cell 9, 17
 Coordinates x 8635
 y 16,810

 Project McClellan AFB IPP Phase II
 Beginning 5 August 1984 and end
6 August 1984 of drilling operation

 Sampling Interval (Estimated) Composite 5 (ft)

 Ground Level Elevation: 55 ft.MSL (topo).

 Type Drill Rig and Operator Drillsystem 1000 CSR
 Log Recorded By T. Walters M. Holtorf

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
80					
	C			CLAY; brown silty silt 15%, clay poor plasticity.	0.8
85					0.1
	C			CLAY; silty, silt 30%, fine-grained.	Slow drilling.
90					0.1
	C			CLAY; same as above, with silt stringer 94-95'.	
95					0.1
	C			SILT; light-brown, with clay clasts water-bearing.	Water sample Depth to water 78' SC 400 Temp 20° pH 6.8
100					0.1
	C			CLAY; brown, confining, no cuttings return.	Lost circulation.
105					0.1
	C			CLAY; tan-yellow, plugged bit lost surface seal.	
110					0.1
	C			CLAY; yellow- trc. silt, fine-grained.	
115					
	C			SAND; fine-med. grained with clay stringers, brown.	0.1
120					

Log of Drilling Operations

 Boring or Well No. RB-7
 Sheet 4 of 2

 Location _____
 Grid Cell 9, 17
 Coordinates x 8635
 y 16,810

 Project McClellan AFB IRR Phase II
 Beginning 5 August 1984 and end
6 August 1984 of drilling operation

 Ground Level Elevation: 55 ft.MSL (ortho).

 Sampling Interval (Estimated) Composite 5 (ft)
 Type Drill Rig and Operator Drillsystem 1000 CSR
 Log Recorded By T. Walters / L. Holtorf

Depth (ft)	Type of Sample Taken	ID No of Sample Taken	Graphic Log	Lithologic Description	Remarks
120					
	C			SAND; fine-med. grained, micaceous, moderately sorted, oxidized.	0.1
125					
	C			SAND; fine-grained, gray-brown, with clay, clay 25%, sand 75%.	0.0
130					
	C			SAND; brown, oxidized, poorly sorted, with minor clay.	0.0
135					
	C			CLAY; tan, confining with trace silt.	0.0 Lost circulation water sample pH 7.0 Cond. 410 Temp. 18°C
140					
	C			SAND; silty with stringers of red clay.	0.0
145				GRAVEL; 144'.	
	C			CLAY; sandy, no return.	0.0
150					
	C			SAND; coarse, poorly sorted, brown, cemented.	0.0
155					
	C			GRAVEL; with sand, very poorly sorted, water bearing.	Sieve analysis = sand Water sample pH 8.5 0.0 Cond. 400 Temp. 19°C
160					



Log of Drilling Operations

Boring or Well No. RB-7
Sheet 5 of 5

Location _____
Grid Cell 9, 17
Coordinates x 8635
y 16,810

Project McClellan AFB IPP Phase II
Beginning 5 August 1984 and end
6 August 1984 of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Drillsystem 1000 CSR/
Log Recorded By T. Walters / L. Holtort

Ground Level Elevation: 55 ft.MSL (core).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
160				Lost Circulation 160'.	0.0
	C				
165					TD 165'.
	C				
170					
	C				
175					
	C				
180					
	C				
185				Total Depth: 165 Feet	
	C				
190					
	C				
195					
	C				
200					Grout hole thru with dual tubes w 75 sacks Portland Cement Type 1 & 11

Log of Drilling Operations

 Boring or Well No. RB-8
 Sheet 1 of 6

 Location _____
 Grid Cell 6, 17
 Coordinates x 5880
 y 16,500
 G.L. Elevation 53 ft, msl (topo.)

 Project McClellan Phase II
 Beginning 30 July 1984 and end
 31 July 1984 of drilling operation
 Sampling Interval (Estimated) 5 (ft)
 Type Drill Rig and Operator Dual tube rotary
 Log Recorded By D. Richmann/T. Walters

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
	G			TOPSOIL	ovm(ppm)
5					
	C			SAND; silty, fine-grained, dry, tan.	0.7
10					
	C			SAND; similar to above with traces of fine gravel.	0.7
15					
	C			SAND; as above.	2.5 (unstable)
20					
	C			SAND; similar to above, coarsening with depth.	
25					
	C			GRAVEL; fine-grained with some fine sand and silt, slightly damp, tan.	
30					
	C			SILT; with some fine sand; slightly damp, tan.	
35					
	C			SILT; as above.	
40					

Log of Drilling Operations

 Boring or Well No. RB-8
 Sheet 2 of 6

 Location _____
 Grid Cell 6, 17
 Coordinates x 5880
 y 16,500

 Project McClellan Phase II
 Beginning 30 July 1984 and end
31 July 1984 of drilling operation
 Sampling Interval (Estimated) 5 (ft)
 Type Drill Rig and Operator Dual tube rotary
 Log Recorded By D. Richmann / T. Walters

 G.L. Elevation 53 ft, msl (topo.)

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
40					ovm (ppm)
	C			SILT; as above.	1.3
45					
	C			SAND; fine-grained with some silt; slightly damp, tan.	
50					
	C			SILT; sandy, fine-grained; slightly damp, tan.	
55					
	C			SILT; similar to above with minor fine gravel.	
60					
	C			SILT; as above.	27 (meter very unstable; battery low; discontinued measurements)
65					
	C			SAND; fine-grained, silty; slightly damp, tan.	
70					
	C			SAND; similar to above with trace fine gravel and clay.	Thin clay stringer at 73.0-73.5'.
75					
	C			CLAY; sandy, with minor fine gravel; sticky, plastic, wet, tan.	
80					

Log of Drilling Operations

 Boring or Well No. RB-8
 Sheet 3 of 6

 Location _____
 Grid Cell 6, 17
 Coordinates x 5880
 y 16,500

 Project McClellan Phase II
 Beginning 30 July 1984 and end
 31 July 1984 of drilling operation
 Sampling Interval (Estimated) 5 (ft)
 Type Drill Rig and Operator Dual tube rotary
 Log Recorded By D. Richmann / T. Walters

 G.L. Elevation 53 ft, msl (topo.)

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
80					
	C			SAND; fine-grained, silty, micaceous; slightly damp, red-brown.	
85					
	C			SAND; similar to above; wet.	
90					
	C			SAND; coarse-grained with minor fine gravel; damp.	
95					
	C			SAND; medium to coarse-grained, moder- ately sorted, damp.	
100		RB-8-1			RB-8-1 (100') T = 25°C pH = 6 C = 200 umhos
	C			SILT; clayey; water-bearing, yellow- brown.	
105					
	C			SILT; as above.	
110					
	C			SILT; similar to above, increasing clay with depth.	
115					
	C			SILT; as above.	
120					Lost circulation

Log of Drilling Operations

 Boring or Well No. RB-8
 Sheet 4 of 6

 Location _____
 Grid Cell 6, 17
 Coordinates x 5880
 y 16,500

 Project McClellan Phase II
 Beginning 30 July 1984 and end
31 July 1984 of drilling operation
 Sampling Interval (Estimated) 5 (ft)
 Type Drill Rig and Operator Dual Tube Rotary
 Log Recorded By D. Richmann / T. Walters

 G.L. Elevation 53 ft, msl (topo.)

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
120					OVM (ppm)
	C			SAND: silty, moderately sorted; slightly damp, tan to brown.	0.04
125					
	C			SAND; similar to above; wet.	0.0
130					
	C			SAND: as above.	0.0
135					
	C			SILT; with some clay; saturated, tan to brown.	RB-8-2 (140') T = 18°C pH = 8 C = 200 µmhos
140		RB-8-2			0.04
	C			CLAY; hard, dry to slightly damp, tan to brown.	
145					
	C			SAND; medium to coarse-grained, water-bearing, brown.	
150					
	C			SAND; as above.	
155					
	C			SAND; as above.	RB-8-3 (160') T = 18°C pH = 7.2 C = 210 µmhos
160					0.09

Log of Drilling Operations

 Boring or Well No. RB-8
 Sheet 5 of 5

 Location _____
 Grid Cell 6, 17
 Coordinates x 5880
 y 16,500

 Project McClellan Phase II
 Beginning 30 July 1984 and end
31 July 1984 of drilling operation
 Sampling Interval (Estimated) 5 (ft)
 Type Drill Rig and Operator Dual Tube Rotary
 Log Recorded By D. Richmann / T. Walters

 G.L. Elevation 53 ft, msl (topo.)

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
160		RB-8-3			
	C			SAND; as above.	OVM (ppm) 0.2
165					
	C			SAND; similar to above, slightly finer-grained.	
170					
	C			SAND; fine to medium-grained; minor silt; water-bearing, brown.	0.017
175					
	C			CLAY; some sand; plastic, saturated, brown.	
180					
	C			SAND; coarse-grained, some fine gravel; highly productive aquifer.	
185					
	C			SAND; as above.	
190					
	C			SAND; as above.	
195					
	C			SAND; as above.	RB-8-4 (200') T = 17°C pH = 7.6 C = 215 µmhos
200					

Log of Drilling Operations

 Boring or Well No. RB-8
 Sheet 6 of 6

 Location _____
 Grid Cell 6, 17
 Coordinates x 5880
 y 16,500

 Project McClellan Phase II
 Beginning 30 July 1984 and end
31 July 1984 of drilling operation

 G.L. Elevation 53 ft, msl (topo.)

 Sampling Interval (Estimated) _____ (ft)
 Type Drill Rig and Operator Dual Tube
 Log Recorded By D. Richmann, T. Walters

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
200		RB-8-4			Lost circulation
	C			SAND; as above.	
205					
	C			SAND; as above.	
210					
	C			SAND; as above.	
215					
	C			GRAVEL; fine-grained, with some coarse sand; red-brown; high production aquifer.	
220					TD = 220'
					Hole grouted with Portland Type I-II neat cement. Cement delivered through drill stem from bottom of hole up to surface.
225					
230					
235					
240					

Log of Drilling Operations

 Boring or Well No. RB-9
 Sheet 1 of 5

 Location _____
 Grid Cell 9, 15
 Coordinates x 8240
 y 14,790

 Project McClellan Phase II
 Beginning 8 August 1984 and end
9 August 1984 of drilling operation
 Sampling Interval (Estimated) 5 (ft)
 Type Drill Rig and Operator Dual tube rotary
 Log Recorded By D. Richmann

 G.L. Elevation 52 ft, msl (topo.)

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
					0VM (ppm)
	G			TOPSOIL.	
5					
	C			CLAY; silty; slightly damp, brown.	0.0
10					
	C			CLAY; as above to approx. 13'; well sorted, tan silt below; damp.	0.0
15					
	C			SILT; well sorted with minor clay; slightly damp, tan.	0.0
20					
	C			SILT; well sorted, slightly damp, red- brown.	0.0
25					
	C			SILT; similar to above; clay increasing with depth.	0.0
30					
	C			SILT; clayey; slightly damp, brown.	0.0
35					
	C			SILT; as above.	0.0
40					

Log of Drilling Operations

 Boring or Well No. RB-9
 Sheet 2 of 5

 Location _____
 Grid Cell 9, 15
 Coordinates x 8240
 y 14,790

 Project McClellan Phase II
 Beginning 8 August 1984 and end
9 August 1984 of drilling operation
 Sampling Interval (Estimated) 5 (ft)
 Type Drill Rig and Operator Dual tube rotary
 Log Recorded By D. Richmann

 C.L. Elevation 52 ft, msl (topo.)

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
40					0VM (ppm)
	C			SILT; clayey, similar to above, but red-brown.	0.0
45					
	C			SILT; with minor clay; slightly damp; red-brown.	0.0
50					
	C			SILT; similar to above, but light tan.	0.0
55					Injected water.
	C			CLAY; silty, red-brown.	0.0
60					
	C			CLAY; as above.	0.0
65					
	C			CLAY; as above to 68'; then changes color to light tan.	0.0
70					
	C			CLAY; as above to approx. 74'; then silty fine sand, slightly damp.	0.0
75					
	C			CLAY; plastic, drv; gray-brown.	0.0
80					Injected water.

Log of Drilling Operations

 Boring or Well No. RB-9
 Sheet 3 of 5

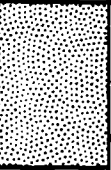

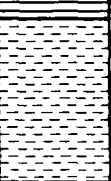
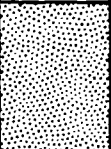
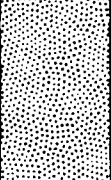



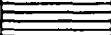
 Location _____
 Grid Cell 9, 15
 Coordinates x 8240
 y 14,790

 Project McClellan Phase II
 Beginning 8 August 1984 and end
9 August 1984 of drilling operation

 Sampling Interval (Estimated) 5 (ft)

 G.L. Elevation 52 ft, msl (topo.)

 Type Drill Rig and Operator Dual tube rotary
 Log Recorded By D. Richmann

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
80	C	RB-9-1		SAND; fine-grained with some silt; slightly damp, brown.	OVM (ppm) 0.0
85	C			CLAY; silty, moderately plastic; damp, brown.	0.0
90	C			SILT; with clay content increasing with depth; slightly damp; brown.	0.0
95	C			SAND; fine-grained, silty, minor clay; moist to saturated at base; brown.	0.0
100	C			SAND; clayey, water-bearing to approx. 103'; silty; moist - 103-105'; brown.	RB-9-1 (100') T = 23°C pH = 8.2 C = 300 umhos
105	C	RB-9-2		CLAY; silty; moist, brown.	
110	C			CLAY; as above.	0.0
115	C			CLAY; silty; moist, red-brown to approx. 118'; 118-120' - silt; well sorted; moist; light brown.	0.0
120	C				

Log of Drilling Operations

 Boring or Well No. RB-9
 Sheet 4 of 5

 Location _____
 Grid Cell 9, 15
 Coordinates x 8240
 y 14,790

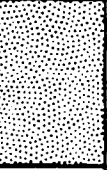


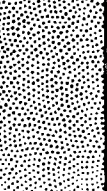
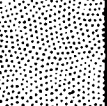
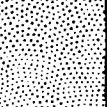
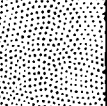
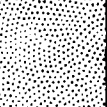
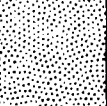
 Project McClellan Phase II
 Beginning 1984 and end
1984 of drilling operation

 Sampling Interval (Estimated) 5 (ft)

 Type Drill Rig and Operator Dual Tube Rotary

 Log Recorded By D. Richmann

 G.L. Elevation 52 ft, msl (topo.)

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks OVM (ppm)
120	C			SAND; coarse-grained with silt matrix, poorly sorted; saturated to approx. 127'; brown.	0.0 RB-9-2 (120') T = 21°C pH = 6.2 C = 26 μmhos
125	C			CLAY; sandy, plastic; moist; brown.	0.0
130	C			CLAY; silty, moist, brown to approx. 132', silt, well-sorted, dry, tan from 132-135.	0.0
135	C			SAND; fine-grained; with some silt; moderately sorted; drv, tan to approx. 138'; clayey silt; damp, tan to base of interval.	0.0
140	C			SAND; coarse-grained in clay matrix; poorly sorted; water-bearing, brown.	0.0
145	C			SAND; as above.	RB-9-3 (160') T = 21°C pH = 6.4 C = 240 μmhos 0.0
150	C			SAND; as above.	0.0
155	C			SAND; as above.	0.0
160	C	RB-9-3		SAND; as above.	0.0

Log of Drilling Operations

 Boring or Well No. RB-9
 Sheet 5 of 5

 Location _____
 Grid Cell 9, 15
 Coordinates x 8240
 y 14,790

 Project McClellan Phase II
 Beginning 1984 and end
1984 of drilling operation

 G.L. Elevation 52 ft, msl (topo.)

 Sampling Interval (Estimated) 5 (ft)
 Type Drill Rig and Operator Dual Tube Rotary
 Log Recorded By D. Richmann

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
160					OVM (ppm)
	C			CLAY; plastic, very moist, brown.	0.0
165					
	C			SAND; coarse-grained in clay matrix; poorly sorted; water-bearing; brown.	0.0
170					
	C			SAND; as above.	0.0
175					
	C			SAND; as above.	0.0 Lost circulation at 180'.
180					RB-9-4 (180') T = 20°C pH = 6.8 C = 235 μmhos
	C			SAND; as above.	0.0
185					
	C			SAND; as above; thin red-brown, plastic clay lens, approx. 187-188.5'.	0.0
190					
	C			SAND; as above; plastic clay layer approx. 193.5-195'.	Hole grouted with Portland Type I-II neat cement. Cement delivered through drill stem from bottom of hole up to surface.
195					
	C			SAND; similar to above, becoming better sorted and finer-grained with depth; 198'-200' medium sand; clean, saturated.	0.0 TD = 200'.
200					

Log of Drilling Operations

 Boring or Well No. RE-10
 Sheet 1 of 1

 Location _____
 Grid Cell 6, 15
 Coordinates x 5875
 y 14,625

 Project McClellan AFB IPP Phase II
 Beginning 13 July 1984 and end
1 August 1984 of drilling operation
 Sampling Interval (Estimated) Composite (ft)
 Type Drill Rig and Operator Drill System 1000 CDR
 Log Recorded By T. Walters M. A. H. H.

 Ground Level Elevation: 43 ft. MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
0					Drilled by the 1000 tube air rotary method.
5	G			TOPSOIL, unconsolidated tan-brown, poorly sorted.	0.0
10	C			SAND; unconsolidated, mod. well sorted, damp from creek nearby.	0.0 Injected water 10'.
15	C			CLAY and SILT; with minor clay clasts light-dark brown, clay 25%.	0.0
20	C			SAND; CLAYEY 25% clay; tan, sand is coarse, unconsolidated.	0.0
25	C			Same as above.	1.0
30	C			SAND; silty, fine-coarse grained poorly sorted, coffee brown, uncon.	0.0
35	C			SAND and GRAVEL; poorly sorted coffee-brown.	0.0
40	C			SAND; silty very well sorted, micaceous low energy fluvial system.	0.0

Log of Drilling Operations

 Boring or Well No. RB-10
 Sheet 2 of 5

 Location _____
 Grid Cell 1, 15
 Coordinates x 5875
 y 14,625

 Project McClellan AFB IPP Phase II
 Beginning 13 July 1984 and end
1 August 1984 of drilling operation
 Sampling Interval (Estimated) Composite 5 (ft)
 Type Drill Rig and Operator Drillsystem 1000 (SK)
 Log Recorded By T. Williams

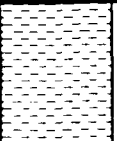
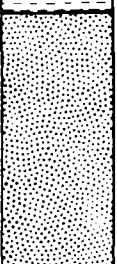
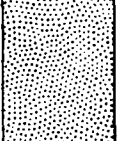
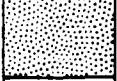

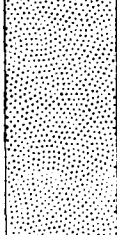
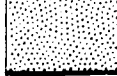

 Ground Level Elevation: 43 ft.MSL (toro).

Depth (ft)	Type of Sample Taken	ID No of Sample Taken	Graphic Log	Lithologic Description	Remarks
40	C			SAND; fine grained micaceous, moderately to well sorted, silt matrix 20%, sand is moist.	0.2
45	C			SAND and CLAY; interbedded, brick red, fine grained, well sorted.	0.2
50	C			SAND; silty with 20% lithic fragments, well sorted, subrounded quartz grains, biotic 5%.	0.2
55	C			SAND; silty, fine-medium grained, micaceous, smokey quartz 70%, lithic frag. 20%, biotite, 10%.	0.3
60	C			SILT; eolian, extremely well sorted, yellow, slightly moist.	0.2
65	C			CLAY; silty fair plasticity.	0.1
70	C			SILT; poor plasticity, light brown, water bearing.	Water sample Water - 78' pH - 6.9 0.1 Cond. 210 Temp. - 20'
75	C			SILT; brown, water bearing, moderately to well sorted, with 5-10" brown clay.	0.1

Location _____
Grid Cell _____ 1, 15
Coordinates x _____ 5875
y _____ 14,625

Project McClellan AFB IRP Phase II
Beginning 13 July 1984 and end 1 August 1984 of drilling operation
Sampling Interval (Estimated) Composite 5 (ft)
Type Drill Rig and Operator Drillsystem 2000 CSR
Log Recorded By T. Walters A. Baltort

Ground Level Elevation: 43 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
80					
85	C			SILT; fine-grained, brown, some stringers of clay 1' thick.	0.1
90	C			SAND; fine-coarse grained, poorly sorted, quartz, subangular, water-bearing.	Water sample Temp. 19°C pH - 7.0 Water 98' \pm 5 gpm
95	C			SAND; moderately sorted, quartz, sub-angular.	0.1
100	C			SAND; poorly sorted, medium to coarse grained.	0.1
105	C			CLAY; silty good plasticity, coffee brown.	0.5
110	C			SAND; fine-medium grained, sub-angular quartz, moderately sorted, coarsening with depth.	0.1
115	C			SAND; medium to coarse grained poorly sorted, quartz is angular, lithic fragments 10%.	0.1
120	C			CLAY; silty, coffee-brown, poor plasticity, trace water at upper contact with sand.	0.1

Log of Drilling Operations

 Boring or Well No. RB-10
 Sheet 1 of 5

 Location _____
 Grid Cell 1, 15
 Coordinates x 5875
 y 14,625

 Project McClellan AFB IPP Phase II
 Beginning 13 July 1984 and end
1 August 1984 of drilling operation
 Sampling Interval (Estimated) Composite 5 (ft)
 Type Drill Rig and Operator Drillsystem 1000 CSR
 Log Recorded By J. Walters

 Ground Level Elevation: 43 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
120				SILT; sandy.	0.5
	C			CLAY; good plasticity, light brown, becoming silty clay 128-130'.	Trc. water at contact injecting water.
125					Trc. water 128-130'
	C			CLAY; silty silt fraction increasing with depth, coarsening downward.	0.5
130					
	C			SAND; moist. Sand moderately sorted medium to coarse grained, dropped probe, bore hole dry.	0.6
135					
	C			CLAY; brown, good plasticity	Water sample 1st major water bearing sand
140					Temp. 18°C 0.5
	C			SAND; poorly sorted, tan, med-coarse grained.	pH 7.1
145					Cond. 490
	C			SAND; med-coarse grained, poorly sorted, 145'-148'.	0.6
150					
	C			SAND; coarse, poorly sorted, 148'-150'.	0.5
155					Water ± 5 gpm.
	C			CLAY; good plasticity, tan with 10' sand interbedded, trc. water.	0.5
160					Sieve = sand
	C			CLAY; red, with sand stringers.	Water sample
					Temp. 18°C
					pH 7.2
					Cond. 200 0.6

Log of Drilling Operations

 Boring Well No. RB-10
 Sheet 5 of 7

 Location _____
 Grid Cell 1, 15
 Coordinates x 5875
 y 14,625

 Project McClellan AFB IDP Phase II
 Beginning 13 July 1984 and end
1 August 1984 of drilling operation
 Sampling Interval (Estimated) Composite 5 (ft)
 Type Drill Rig and Operator Drillsystem 1000 CSR,
 Log Recorded By T. Walters L. Holtort

 Ground Level Elevation: 43 ft. MSL (tomo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
160	C			SAND; clayey, fine-coarse grained, poorly sorted with stringers of red clay.	Water \pm 5 gpm. 0.6
165					
170	C			CLAY; sandy with white gypsum minerals, tan.	0.6
175	C			SAND; cemented, rusty red w/gyp. minerals, may be volcanic in origin.	0.6
180	C			CLAY; good plasticity, gray with gypsum streaks.	0.6
185	C			SAND; fine-medium grained with 5% magnetite, oxidized, micaceous water blood-red.	\pm 100 gpm. 0.5
190	C			SAND; medium grained, moderately sorted quartz clear-yellow, highly oxidized.	0.6
195	C			SAND and CLAY; interbedded, poor plasticity, clay does not contain water, sand producing \pm 50 gpm.	0.5
200	C			CLAY, confining with sand stringers 1' thick, tan. Total Depth: 200 Feet	Great hole thru ann dual tubes w/Ready Mix Portland Cement Type I & II 0.6

Log of Drilling Operations

 Boring or Well No. RB-11
 Sheet 1 of 5

 Location _____
 Grid Cell 9, 14
 Coordinates x 84,00
 y 13,350

 Project McClellan Phase II
 Beginning 6 August 1984 and end
7 August 1984 of drilling operation
 Sampling Interval (Estimated) 5 (ft)
 Type Drill Rig and Operator Dual tube rotary
 Log Recorded By D. Richmann

 Elev. of top of hole 32 ft, msl (topo.)

Depth (ft)	Type of Sample Taken	ID No of Sample Taken	Graphic Log	Lithologic Description	Remarks
	G			TOPSOIL.	0VM (ppm)
5					
	C			SAND; very fine-grained; minor clay, dry to slightly damp; tan.	0.0
10					
	C			SILT; well sorted; minor clay increas- ing with depth; gray brown to brown; slightly damp.	0.0
15					
	C			SILT; same as above.	0.0
20					
	C			SILT; fining downward to silty clay; slightly damp; gray brown to brown.	0.0
25					
	C			SILT; well sorted; slightly damp; tan to red-brown.	0.0
30					
	C			SILT; fine sandy; moderately sorted; slightly damp; tan.	0.0
35					
	C			SAND; medium-grained, silty to approx. 36.5'; red-brown, well sorted silt below	0.0
40					

Log of Drilling Operations

 Boring or Well No. RB-11
 Sheet 2 of 5

 Location _____
 Grid Cell 9, 14
 Coordinates x 8400
 y 13,350

 Project McClellan Phase II
 Beginning 6 August 1984 and end
7 August 1984 of drilling operation

 Sampling Interval (Estimated) 5 (ft)

 Type Drill Rig and Operator Dual tube rotary
 Log Recorded By D. Richmann

 Elevation 52 ft, msl (topo.)

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
40					OVM (ppm)
	C			SAND and SILT; interbedded, slightly damp; red-brown to gray.	0.0
45					0.0
	C			SILT; very fine powder; with some clay; moist; red-brown to gray-brown color-banded.	Color banding suggests alternating oxidized and reduced zones.
50					0.0
	C			SILT; with clay increasing with depth; hard; brown.	0.0
55					Injected water.
	C			SAND; fine-grained with some clay and silt; poorly sorted; damp; red-brown.	0.0
60					0.0
	C			CLAY; silty, hard; brown.	0.0
65					Injected water.
	C			CLAY; similar to above, grading downward to well-sorted silt.	0.0
70					0.0
	C			SILT; well sorted, gray brown to approx. 72'; brown silty clay to base of interval, damp.	0.0
75					0.0
	C			SILT; well sorted to approx. 77'; poorly sorted medium-grained sand below; damp; brown.	0.0

Log of Drilling Operations

 Boring or Well No. RB-11
 Sheet 3 of 5

 Location _____
 Grid Cell 9, 14
 Coordinates x 8400
 y 13,350

 Project McClellan Phase II
 Beginning 6 August 1984 and end
7 August 1984 of drilling operation
 Sampling Interval (Estimated) 5 (ft)
 Type Drill Rig and Operator Dual tube rotary
 Log Recorded By D. Richmann

 G.L. Elevation 52 ft, msl (topo.)

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
80					OVM (ppm)
	C			SILT; some fine sand; minor clay near top of interval; damp; gray-brown.	0.0
85					
	C			CLAY; silty; damp; brown.	0.0
90					
	C			CLAY; silty to very plastic; minor sand lenses; damp; brown.	0.0
95					
	C			SAND; with some silt; moderately sorted; grading downward to well sorted silt; moist; gray brown.	0.0
100		RB-11-1			RB-11-1 (100') T = 20°C pH = 6.4 C = 215 cmhos
	C			SAND; medium grained, water-bearing; grading to well-sorted silt, moist, below approx 103.5'; brown.	0.3
105					
	C			CLAY; silty; hard; damp; brown.	0.0
110					
	C			CLAY; as above.	0.0
115					
	C			CLAY; as above to approx. 118.5'; sandy clay below.	0.0
120					

Log of Drilling Operations

 Boring or Well No. RB-11
 Sheet 4 of 5

 Location _____
 Grid Cell 9, 14
 Coordinates x 8400
 y 13,350

 Project McClellan Phase II
 Beginning 6 August 1984 and end
7 August 1984 of drilling operation

 Sampling Interval (Estimated) 5 (ft)

 Type Drill Rig and Operator Dual Tube Rotary

 Log Recorded By D. Richmann

 G.L. Elevation 52 ft. msl (topo.)

Depth (ft)	Type of Sample Taken	In No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
120					OVM (ppm)
	C			CLAY; wet from approx. 124'-125'; brown.	0.0
125					
	C			CLAY; as above.	0.0 Injected water.
130					
	C			SAND; coarse grained; silty; poorly-sorted; saturated; brown.	
135				CLAY; hard, dry - 135'-138'.	
	C			SAND; as above - 138'-140'.	
140		RB-11-2			RB-11-2 (140') T = 20°C pH = 6.8 C = 420 umhos
	C			CLAY; sandy; poorly sorted; damp; brown.	0.0
145					
	C			SAND; with some clay; poorly sorted, very moist; red-brown.	0.0 RB-11-3 (160') T = 19°C pH = 6.7 C = 425 umhos
150					
	C			SAND; coarse; and fine gravel in clay matrix; poorly sorted; water-bearing, red-brown.	0.2
155					
	C			SAND; as above to approx. 158'; sandy clay below.	
160					


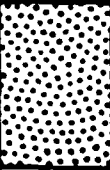

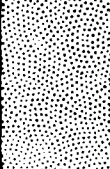
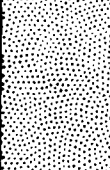
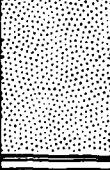

Log of Drilling Operations

 Boring or Well No. RB-11
 Sheet 5 of 5

 Location _____
 Grid Cell 9, 14
 Coordinates x 8400
 y 13,350

 Project Macellan Phase II
 Beginning 6 August 1982 and end
7 August 1982 of drilling operation
 Sampling Interval (Estimated) 5 (ft)
 Type Drill Rig and Operator Dual Tube Rotary
 Log Recorded By D. Richmann

 S.L. Elevation 52 ft, msl (topo.)

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
160	C	RB-11-3		CLAY; hard; brown.	0.0 OVM (ppm) 0.0 Injected water.
165	C			GRAVEL; well sorted, water-bearing to approx. 168'; then clay, as above.	0.3
170	C			CLAY; hard; dry, brown to approx. 172'; then micaceous gravel; saturated.	0.3 No Sample (interconnection assumed)
175	C			SAND; fine-grained; with some silt; water-bearing; brown.	0.3
180	C			SAND; similar to above; micaceous, alternating with lenses of clay.	0.3
185	C			SAND; as above.	0.3
190	C			CLAY; hard; brown.	0.3 TD = 192'.
195	C				Hole grouted with Portland Type I-II neat cement. Cement delivered through drill stem from bottom of hole up to surface.
200					

Log of Drilling Operations

 Boring or Well No. RB-12
 Sheet 1 of 5

 Location _____
 Grid Cell 6, 14
 Coordinates x 5800
 y 13,900

 Project McClellan Phase II
 Beginning 3 August 1984 and end
3 August 1984 of drilling operation
 Sampling Interval (Estimated) 5 (ft)
 Type Drill Rig and Operator Dual tube rotary
 Log Recorded By D. Richmann

 G.L. Elevation 47 ft, msl (topo.)

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
					W (ppm)
	G			TOPSOIL.	
5					
	C			SAND; poorly sorted; damp; brown.	
10					
	C			CLAY; some silt and fine sand; damp; brown.	
15					
	C			SILT; interbedded with hard clay; slightly damp; medium to dark brown.	
20					
	C			SILT; well sorted, grading to fine sand at base; slightly damp; brown to red- dish brown.	
25					
	C			SAND; fine-grained, some clay; slightly damp; brown.	0.1
30					
	C			CLAY; silty, interbedded with silt; minor sand; slightly damp; brown.	0.0
35					
	C			SILT; grading to fine sand; slightly damp; brown.	0.1
40					

Log of Drilling Operations

 Boring or Well No RB-12
 Sheet 2 of 5

 Location _____
 Grid Cell 6, 14
 Coordinates x 5800
 y 13,900

 Project McClellan Phase II
 Beginning 3 August 1984 and end
3 August 1984 of drilling operation

 Sampling Interval (Estimated) 5 (ft)

 G.L. Elevation 47 ft, msl (topo.)

 Type Drill Rig and Operator Dual tube rotary
 Log Recorded By D. Richmann

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
40					OVM (ppm)
	C			SILT; some silty fine sand; damp; brown.	0.0
45					
	C			CLAY; gray-brown; some silt and fine sand; damp; red-brown to brown.	0.0
50					
	C			SILT and fine sand; damp; yellow-brown.	0.0
55					
	C			CLAY; silty and plastic with hard clay layer near base; damp; dark brown.	0.0 Fine sand in basal 6".
60					
	C			SAND; fine-grained, silty grading to clayey; damp; brown.	0.0
65					
	C			SAND; fine-grained; damp; brown.	0.0
70					
	C			SILT; well-sorted; damp; gray-brown to oxidized red-brown at approx. 72'.	0.0 Silty clay, red-brown below approx. 73'.
75					
	C			CLAY; silty, plastic; moist; brown.	0.0
80					

Log of Drilling Operations

 Boring or Well No. RB-12
 Sheet 3 of 5

 Location _____
 Grid Cell 6, 14
 Coordinates x 5800
 y 13,900

 Project McClellan Phase II
 Beginning 3 August 1984 and end
3 August 1984 of drilling operation
 Sampling Interval (Estimated) 5 (ft)
 Type Drill Rig and Operator Dual tube rotary
 Log Recorded By D. Richmann

 G.L. Elevation 47 ft, msl (topo.)

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
80	C			CLAY; silty, hard; slightly damp; gray-brown.	OVM (ppm) Injected water. 0.0
85	C			CLAY; sandy, slightly damp, brown; wet at 89'.	0.0
90	C			SAND; fine to medium-grained; moist but not saturated; brown.	I No sample. 0.0
95	C			SAND; as above; trace clay; water at 98'	RB-12-1 (100') T = 16°C pH = 6.8 C = 520 umhos
100	C	RB-12-1		CLAY; hard, dry; brown.	0.0
105	C			CLAY; silty, grading to silty fine sand; slightly damp; brown.	0.0
110	C			CLAY; silty, damp; brown.	0.0
115	C			CLAY; as above.	0.0
120	C				

Log of Drilling Operations

 Boring or Well No. RB-12
 Sheet 4 of 5

 Location _____
 Grid Cell 6, 14
 Coordinates x 5800
 y 13,900









 Project McClellan Phase II
 Beginning 3 August 1984 and end
3 August 1984 of drilling operation

 Sampling Interval (Estimated) 5 (ft)

 G.L. Elevation 47 ft, msl (topo.)

 Type Drill Rig and Operator Dual Tube Rotary

 Log Recorded By D. J. Brennan

Depth (ft)	Type of Sample Taken	ID No of Sample Taken	Graphic Log	Lithologic Description	Remarks
120	C	RB-12-2		CLAY; as above.	0VM (ppm) 0.0
125	C			CLAY; as above.	0.0
130	C			CLAY; as above.	0.0
135	C			CLAY; as above; wet at 138'.	0.0
140	C			SILT; with some sand; water-bearing; brown.	RB-12-2 (140') T = 18°C pH = 6.8 C = 265 umhos 0.0
145	C			CLAY; silty, grading to clayey silt and fine sand; slightly damp; alternating gray-brown to red-brown.	0.0
150	C			CLAY; as above.	0.0
155	C			SILT; with some clay alternating with silty clay; slightly damp; brown.	0.0

Log of Drilling Operations

 Boring or Well No. RB-12
 Sheet 5 of 5

 Location _____
 Grid Cell 6, 14
 Coordinates x 5800
 y 13,900

 Project McClallan Phase II
 Beginning 3 August 1984 and end
3 August 1984 of drilling operation
 Sampling Interval (Estimated) 5 (ft)
 Type Drill Rig and Operator Dual Tube Rotary
 Log Recorded By D. Eichmann

 S.L. Elevation 47 ft, msl (topo.)

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
160	C			CLAY; silty, plastic; moist; light gray	OVM (ppm) Injected water. 0.0
163	C			CLAY; similar to above; wet.	0.0 Possible water zone at approx. 168', but too thin to sample.
170	C			CLAY; silty overlying clayey gravel; brown to red brown.	Lithologic contact at approx. 172'. 0.02
173	C	RB-12-3		GRAVEL; poorly sorted, clay matrix, water-bearing; red brown.	RB-12-3 (180') T = 19°C pH = 7.3 C = 310 umhos 0.04
176	C			GRAVEL; similar to above; fining downward to clayey sand; poorly sorted; water-bearing; red-brown.	0.0
180	C			SAND; with clay matrix; poorly sorted; moist; red-brown.	
183	C			SILT; with some clay; damp; red-brown.	0.0 ID = 200'. Hole grouted with Portland Type I-II neat cement. Cement delivered through drill stem from bottom of hole up to surface.
186	C			SILT; well sorted; slightly damp; yellow-brown.	0.0

RADIAN
CORPORATION

Log of Drilling Operations

Boring or Well No. 13
Sheet 1 of 5Location _____
Grid Cell 5, 14
Coordinates x 4100
y 13580Project McClellan AFB IEP Phase II
Beginning 8-15-84 and end
8-17-84 of drilling operationSampling Interval (Estimated) Composite 5 (ft)Ground Level Elevation: 45 ft.MSL (topo).Type Drill Rig and Operator Chicago Pneumatic CP2000
Log Recorded By W. Boettner J. Horst

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
0					<u>ovm (ppm)</u>
5	C			SAND: Silty, clayey, fine to medium grain, brown	
10	C			SAND: Silty, fine to medium grain, brown	0.1
15	C			CLAY: Silty, sandy, fine to very fine grain, tan	0.5
20	C			SAND: Clayey, silty, fine to very fine grain, brown	0.3
25	C			SAND: Clean, medium grain to fine grain, poorly sorted, tan	0.3
30	C			SAND: Silty, fine to medium grain, poorly sorted, tan	0.25
35	C			SAND: Silty, fine to very fine grain, tan to brown	0.15
40	C			CLAY: Silty, sandy, fine to very fine grain, tan	0.15

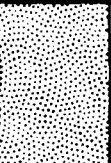
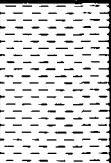
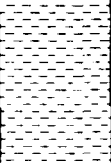
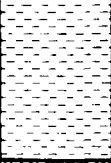
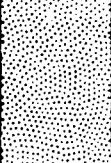
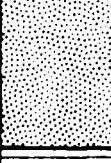


Log of Drilling Operations

 Boring or Well No. 13
 Sheet 1 of 1

 Location _____
 Grid Cell _____
 Coordinates x _____
 y _____

 Project McClellan AFB IPP Phase 17
 Beginning 8-15-84 and end 8-17-84 of drilling operation
 Sampling Interval (Estimated) Composite 5 (ft)
 Type Drill Rig and Operator Chicago Pneumatic CP2000
 Log Recorded By W. Boettner W. Gerst

 Ground Level Elevation: 45 ft. MSL (top).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
40	C			SAND: Clayey, fine to medium grain, brown	0.4
45	C			SILT: Clayey, sandy, fine to very fine grain, tan	0.2
50	C			SILT: Clayey, sandy, very fine grain, tan	0.15
55	C			SILT: Clayey	0.23
60	C			SAND: Silty, micaceous, fine to very fine	0.21
65	C			SAND: Clayey, medium to coarse grain, plastic, dark brown	0.01
70	C			CLAY: Silty, sandy, fine to medium grain, brown	0.02
75	C			SILT: Clayey, sandy, tan	0.01

Log of Drilling Operations

 Boring or Well No. 13
 Sheet 2 of 3

 Location _____
 Grid Cell _____
 Coordinates x _____
 y _____

 Project McClellan AFB IPD Phase II
 Beginning 8-15-84 and end 8-17-84 of drilling operation
 Sampling Interval (Estimated) Composite (ft)

 Ground Level Elevation: 45 ft. MSL (topo).

 Type Drill Rig and Operator Chicago Pneumatic CP200
 Log Recorded By W. Boettner AS. First

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
80					
	C			SAND: Clayey, fine to medium grain, brown	0.1
85					
	C			SAND: Clayey, fine to medium, brown	0.2
90					
	C			SAND: Silty, clayey, cemented, brown	0.1
95					
	C			SAND: Fine to medium grain, brown	0.2
100					Water sample at 100' ph = 5.0 Temperature = 22° Conductivity = 260
	C			CLAY: Silty, sandy, micaceous, hard	0.15
105					
	C			SAND: Silty, medium to coarse grain	0.2
110					
	C			SAND: Micaceous, fine to medium grain	0.1
115					Water sample at 115' ph = 5.1 Temperature = 20°C Conductivity = 220
	C			SAND: Fine to medium grain, brown	0.1
120					

Log of Drilling Operations

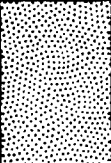
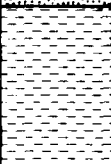

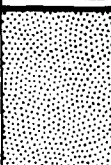
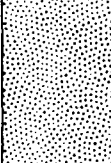
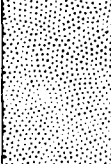
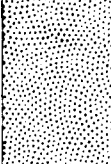
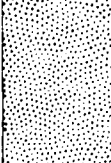
 Boring or Well No. 13
 Sheet 1 of 1

 Location _____
 Grid Cell _____
 Coordinates x _____
 y _____

 Project McClellan MR 100 Phase II
 Beginning 8-15-84 and end 8-17-84
 of drilling operation
 Sampling Interval (Estimated) Composite 2 (ft)

 Ground Level Elevation: 45 ft. MSL (topo).

 Type Drill Rig and Operator Chicago Pneumatic CP-100
 Log Recorded By A. Roettner Date 8-18-84

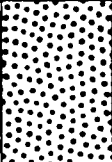
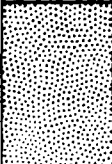
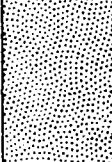
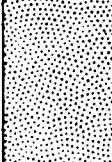
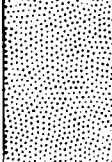
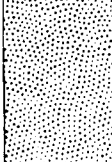
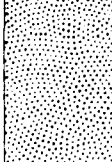
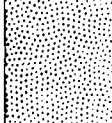
Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
120	C			SAND: Clayey, silty, plastic, brown	0.25
125	C			SILT: Clayey, brown to tan	0.1
130	C			CLAY: Silty, sandy, brown	0.1
135	C			SAND: Silty fine to medium grain with sparse clay clasts	0.15 Water sample at 140 pH = 5.4 Temperature = 20°C Conductivity = 260
140	C			SAND: Silty fine to medium grain, brown water	0.01
145	C			SAND: Clayey, fine to medium grain, brown, water	0.1
150	C			SAND: Silty, medium to coarse grain, abundant water	0.2
155	C			SAND: Clean, medium to coarse, abundant water	0.1

Location _____
Grid Cell _____
Coordinates x _____
 y _____

Project McClintock AFB, CA, Phase II
Beginning 8-15-84 and end 8-17-84 of drilling operation
Sampling Interval (Estimated) 1 sample/day (ft)

Ground Level Elevation: 45 ft.MSL (topo).

Type Drill Rig and Operator Shallow Drilling Co. Ltd.
Log Recorded By B. J. ...

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
160	C			GRAVEL: Sandy, coarse, brown and white	0.15
165	C			SAND: Medium to coarse	0.10
170	C			SAND: Medium to coarse, cemented, FeO _x staining	0.50
175	C			SAND: Clayey, fine to medium grain, clay increasing with depth	0.1
180	C			SAND: Clayey, medium to coarse grains, brown	0.0
185	C			SAND: Clayey, fine to medium grain, brown, clay increases with depth	0.0
190	C			SAND: Clayey, fine to medium grain, micaceous	0.0
195	C			SAND: Fine to medium grain, very micaceous, brown	0.0
200	C			Total Depth: 200 Feet	0-200' 4 1/2" H 1 1/2" Diameter x 29 Diameter x 29 Diameter x 29 Diameter x 29

Log of Drilling Operations

 Boring or Well No. RB 14
 Sheet 1 of 5

 Location _____
 Grid Cell 6, 10
 Coordinates x 5100
 y 9700

 Project McClellan AFB IRP Phase II
 Beginning 8-27-84 and end 8-28-84 of drilling operation
 Sampling Interval (Estimated) Composite 5 (ft)
 Type Drill Rig and Operator Chicago Pneumatic CP200
 Log Recorded By W. Boettner B. Horst

 Ground Level Elevation: 45 ft.NSL (toro).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
0					ovm/ppm
5	C			SAND: Clayey, medium to very fine grained quartz, brown	0.0
10	C			SAND: silty, clayey, fine to medium grained, FeO _x staining	0.0
15	C			SAND: Silty, clayey, coarse to very fine grained, light tan	0.0
20	C			SAND: Silty with clay, very fine grained, tan	0.0
25	C			SAND: Clayey, fine to very fine grained, tan to brown	0.02
30	C			SAND: Clayey, silty, sand, fine to very fine grained, clay, plastic	0.01
35	C			SAND: Fine to very fine grained, tan to light gray	0.02
40	C			SAND: Fine to very fine grained, tan to light brown	0.01

Log of Drilling Operations

 Boring or Well No. RB 14
 Sheet 2 of 5

 Location _____
 Grid Cell _____
 Coordinates x _____
 y _____

 Project McClellan AFB IEP Phase II
 Beginning 8-27-84 and end 8-28-84 of drilling operation

 Sampling Interval (Estimated) Composite 5 (ft)

 Ground Level Elevation: 45 ft. MSL (topo).

 Type Drill Rig and Operator Chicago Pneumatic CP2000

 Log Recorded By W. Boettner W. Horst

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
40					
	C			SAND: Clayey, silty, fine to very fine grained, tan to light brown	0.01
45					
	C			SAND: Silty, clayey, fine to very fine grained, reddish brown	0.02
50					
	C			SAND: Silty, clayey, fine to very fine grained, red brown	0.01
55					
	C			SAND: Silty, clayey, fine to very fine grained, brown to tan	0.02
60					
	C			SAND: Clayey, silty, fine to very fine grained, tan to brown	0.01
65					
	C			SAND: Clayey, silty, fine to very fine grained	0.02
70					
	C			SAND: Silty, clayey, very fine grained, tan to brown	0.01
75					
	C			SAND: Clayey, silty, fine to very fine grained, brown	0.01
80					

Log of Drilling Operations

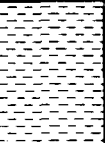
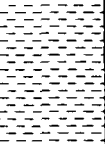
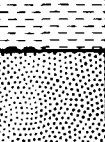
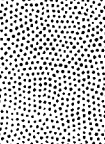
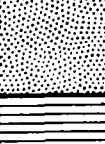

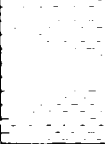
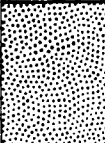
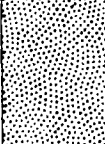
 Boring or Well No. RB 14
 Sheet 3 of 3

 Location _____
 Grid Cell _____
 Coordinates x _____
 y _____

 Project McClellan AFB IRP Phase II
 Beginning 8-27-84 and end
8-28-84 of drilling operation
 Sampling Interval (Estimated) Composite 5 (ft)

 Ground Level Elevation: 45 ft.MSL (tomo).

 Type Drill Rig and Operator Chicago Pneumatic CP200
 Log Recorded By N. Beettner Ab. Gerst

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
80	C			SILT: Sandy, clayey, sandy, brown	0.0 Water sample at 80' pH = 5.7 Conductivity = 250 Temperature = 22°C
85	C			SILT: Clayey, sandy	0.0
90	C			SAND: Silty with trace of clay, fine grained, brown	0.0
95	C			SAND: Clayey, sandy, micaceous, brown	0.02
100	C			CLAY: Silty, sandy, dark brown	0.03
105	C			SILT: Clayey, sandy, tan to gray	0.04
110	C			SAND: Clayey, silty, fine to very fine grained	0.02
115	C			SAND: Clayey, silty, fine to very fine grained, 10-15" dark grains	0.01
120	C				

Log of Drilling Operations

 Boring or Well No. RB 14
 Sheet 1 of 5

 Location _____
 Grid Cell _____
 Coordinates x _____
 y _____

 Project McClellan AFB IMP Phase II
 Beginning 8-27-84 and end 8-28-84 of drilling operation
 Sampling Interval (Estimated) Composite (ft)

 Ground Level Elevation: 45 ft. MSL (topo).

 Type Drill Rig and Operator Chicago Pneumatic CP-300
 Log Recorded By S. Boettner AB. Horst

Depth (ft)	Type of Sample Taken	ID No of Sample Taken	Graphic Log	Lithologic Description	Remarks
120	C			SAND: Clayey, silty, gravelly, dark brown	0.03 Water sample at 120' pH = 6.0 Conductivity = 220 Temperature = 20°C
125	C			SAND: Silty, clayey, gravelly, very fine grained	0.01
130	C			SAND: Silty, gravelly, clayey, brown to gray	0.02
135	C			SAND: Clayey, silty, brown	0.03
140	C			SAND: Clayey, coarse to medium grained	0.01
145	C			SAND: Gravelly, clayey, silty	0.05
150	C			SAND: Gravelly, clayey	0.01
155	C			SAND: Clay, silty, fine to very fine grained	0.02

Log of Drilling Operations

 Boring or Well No. RB 14
 Sheet 5 of 5

 Location _____
 Grid Cell _____
 Coordinates x _____
 y _____

 Project McClellan AFB IPD Phase II
 Beginning 8-27-84 and end 8-28-84 of drilling operation
 Sampling interval (Estimated) Composite (ft)

 Ground Level Elevation: 45 ft.MSL (topo).

 Type Drill Rig and Operator Hydramatic CP2000
 Log Recorded By Boettcher Ap. 10/8/84

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
160	C			SAND: Gravelly, clean, coarse grained	0.02
165	C			SAND and GRAVEL: Clean, coarse grained	0.01
170	C			SAND and GRAVEL: Clean, coarse grained	0.02
175	C			SAND and GRAVEL: trace of clay	0.01
180	C			SAND and GRAVEL: Clayey	0.03
185	C			SAND and GRAVEL: Coarse grained, some clay	0.01
190	C			SAND and GRAVEL: Very coarse grained, increasing clay content	0.01 Water sample at 200' PH = 5.8 Conductivity = 240 Temperature = 22°C
195	C			SAND: Coarse grained, clayey	0-200' 4 1/2" hole drilled hole through and tubes & 31 inches Portland Cement Pipe 1 & 11
200				Total Depth: 200 Feet	0.01

Log of Drilling Operations

 Boring or Well No. 15
 Sheet 1 of 5

 Location _____
 Grid Cell 9.10
 Coordinates x 8350
 y 9950

 Project McClellan AFB IEP Phase II
 Beginning 8-20-84 and end
8-21-84 of drilling operation
 Sampling Interval (Estimated) Composite 5 (ft)

 Ground Level Elevation: 55 ft.MSL (topo).

 Type Drill Rig and Operator Chicago Pneumatic CP200
 Log Recorded By W. Boettner / B. Horst

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
0					ovm(ppm)
5	C			SILT: Clayey, red brown	0.0
10	C			SILT: Clayey, tan to brown	0.04
15	C			SAND: Clayey, silty, red brown	0.06
20	C			SAND: Silty, fine to very fine grained, subangular to subrounded, trace of clay	0.04
25	C			SAND: Clayey, medium to fine grained, angular to subangular, brown	0.08
30	C			SAND: Clayey, silty, fine to very fine, red brown	0.02
35	C			SILT: Clayey, sandy, micaceous, clay content increases with depth, red brown	0.02
40	C			CLAY, Silty, sandy, micaceous, red brown	0.02

Log of Drilling Operations

 Boring or Well No. 15
 Sheet 2 of 3

 Location _____
 Grid Cell _____
 Coordinates x _____
 y _____

 Project McClellan AFB IFF Phase II
 Beginning 8-20-84 and end 8-21-84 of drilling operation
 Sampling Interval (Estimated) Composite 5 (ft)
 Type Drill Rig and Operator Chicago Pneumatic CP2000
 Log Recorded By E. Soetner

 Ground Level Elevation: 55 ft.MSL (tore).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
40					
	C			CLAY: Sandy, silty, brown	0.02
45					
	C			CLAY: Silty, sandy, micaceous, clay somewhat plastic, reddish brown	0.0
50					
	C			SAND: Silty, clayey, fine to medium grained, hard, reddish brown	0.0
55					
	C			SAND: Clayey, silty, fine to very fine grained, reddish brown	0.0
60					
	C			GRAVEL: Sandy, silty, clayey, brown	0.04
65					
	C			SAND: Clayey, silty, medium to coarse, angular to subangular, poorly sorted	0.06
70					
	C			SAND: Clayey, silty, fine to very fine grained, subangular to subrounded, tan	0.02
75					
	C			SAND: Clayey, silty, brown	0.2
80					

Log of Drilling Operations

 Boring or Well No. 15
 Sheet 3 of 3

 Location _____
 Grid Cell _____
 Coordinates x _____
 y _____

 Project McClellan AFB IRP Phase II
 Beginning 8-20-84 and end 8-21-84 of drilling operation
 Sampling Interval (Estimated) Composite 3 (ft)
 Type Drill Rig and Operator Chicago Pneumatic CP200
 Log Recorded By W. Boettner W. Horst

 Ground Level Elevation: 55 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
80					
	C			CLAY: Plastic, silty, sandy, fine grained, brown	0.04
85					
	C			CLAY: Plastic, sandy, fine to very fine grained, brown	0.02
90					
	C			SAND: Clayey, silty, medium to coarse grained	0.02
95					
	C			CLAY: Silty, sandy, plastic, fine to very fine grained, subangular to subrounded, dark brown	0.01
100					
	C			SAND: Silty, fine to very fine, subangular to subrounded, tan	0.06
105					
	C			SILT: Sandy, hard, tan to brown	0.04
110					
	C			SILT: Sandy, clayey, fine to very fine and medium grained, brown	0.04
115					
	C			SAND: Gravelly, silty, clayey, fine to medium grained, brown	0.02
120					

Log of Drilling Operations

 Boring or Well No. 15
 Sheet 1 of 1

 Location _____
 Grid Cell _____
 Coordinates x _____
 y _____

 Project McClellan AFB IIR Phase II
 Beginning 8-20-84 and end 8-21-84 of drilling operation
 Sampling Interval (Estimated) Composite (ft)
 Type Drill Rig and Operator Chicago Pneumatic CP-100
 Log Recorded By A. Beettner 13. moist

 Ground Level Elevation: 55 ft.MSL (top).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
120	C			SAND: Micaceous, medium to coarse, Muscovite, Biotite, Hornblende	0.0 Water sample at 120' pH = 5.5 Temperature = 22°C Conductivity = 230
125	C			CLAY: Silty, sandy, fine to medium grain, dark brown	0.06
130	C			CLAY: Silty, plastic, scattered gravels, dark brown	0.0
135	C			CLAY: Sandy, silty, medium grain, dark brown	0.01
140	C			SAND and GRAVEL: Clayey, medium to coarse	0.0
145	C			SAND: Clayey, medium to coarse grain, plastic clay, dark brown	0.02
150	C			SAND: Clayey, fine to coarse grain, poorly sorted, subangular to sub-rounded, clay decreases with depth	0.02
155	C			SAND: Silty, fine to very fine grain, brown - moist	0.02

Log of Drilling Operations

 Boring or Well No. 15
 Sheet 1 of 1

 Location _____
 Grid Cell _____
 Coordinates x _____
 y _____

 Project McClellan AFB IPP Phase II
 Beginning 8-20-84 and end 8-21-84 of drilling operation
 Sampling Interval (Estimated) Composite (ft)

 Ground Level Elevation: 55 ft. MSL (toro).

 Type Drill Rig and Operator Chicago Pneumatic CP1000
 Log Recorded By Boettner No. 1st

Depth (ft)	Type of Sample Taken	ID No of Sample Taken	Graphic Log	Lithologic Description	Remarks
160				SAND: Gravelly, micaceous, medium to coarse grain, red brown - water	0.02 Water sample at 160' pH = 6.2 Temperature = 18°C Conductivity = 215
170				SAND: Gravelly, micaceous, medium to coarse grain, red brown - water	0.02
175				SAND: Gravelly, micaceous, medium to coarse grain, red brown	0.02
180				SAND: Micaceous, medium to coarse grain, red brown, dark minerals = 46%	0.03
185				SAND: Silty, clayey, micaceous, clay increasing with depth	0.02
190				SAND: Silty, clayey, medium to coarse grain, dark minerals = 25%, red brown	0.01
195				CLAY: Silty, sandy, brown	0.04 water sample at 200' pH = 5.7 Temperature = 18°C Conductivity = 210
200				SAND: Micaceous, angular to sub-angular, poorly sorted	0.04 0-200' 4 1/2" hole drilled hole through and times w/ 42 cross drilling cement type 1 & 11
200				Total Depth: 200 Feet	

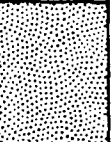
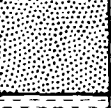
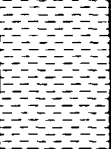
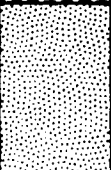
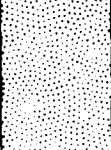
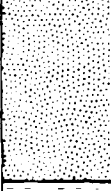
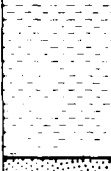
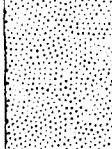
Log of Drilling Operations

 Boring or Well No. RB-16
 Sheet 1 of 3

 Location _____
 Grid Cell S, 7
 Coordinates x 7800
 y 6950

 Project McClellan Phase II
 Beginning 10 August 1984 and end
10 August 1984 of drilling operation
 Sampling Interval (Estimated) 5 (ft)
 Type Drill Rig and Operator Dual tube rotary
 Log Recorded By D. Richmann

 Elev. 52 ft, msl (topo.)

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
					0VM (ppm)
5	G			TOPSOIL.	
10	C			SAND; poorly sorted with some fine gravel; fining downwards to dry yellow-brown silt at approx. 8'.	0.0
15	C			SILT; slightly damp; tan; with occasional lenses of sand and gravel.	0.0
20	C			SAND; fine-grained, coarsening with depth, some silt; poorly to moderately sorted; dry, tan.	0.0
25	C			SAND; medium-grained; silt in upper approx. 1' of interval; dry; tan.	0.0
30	C			SAND; medium-grained, silty; poorly sorted; dry; tan.	0.0
35	C			SILT; minor silty clay; slightly damp; tan.	0.0
40	C			SAND; and CLAY; interbedded; silty; moist; brown.	0.0

Log of Drilling Operations

 Spring or Well No. RS-10
 Sheet 2 of 2

 Location _____
 Grid Cell 8, 7
 Coordinates x 7800
 y 6950

 Project McClellan Phase II
 Beginning 10 August 1964 and end
10 August 1964 of drilling operation
 Sampling Interval (Estimated) 5 (ft)
 Type Drill Rig and Operator Dual tube rotary
 Log Recorded By D. Richman

 Elev. Elevation 52 ft, msl (topo.)

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
40					
	C			CLAY; silty, wet in upper approx. 1' of interval; damp below; brown.	0VM (ppm) 0.0
45					
	C			SILT; some fine sand; slightly damp; brown.	0.0
50					
	C			SILT; as above.	0.0
55					
	C			SILT; similar to above; some clay, red-brown, near base of interval.	0.0
60					
	C			SILT; minor hard clayey silt; damp; tan to rust-brown.	0.0
65					
	C			SILT; as above.	0.0
70					
	C			SILT; very fine, color-banded rust-brown to cream; clay, stiff and hard below approx. 72'.	Infected water.
75					
	C			CLAY; stiff, hard; brown; minor coarse sandy clay zone approx. 77-78'.	0.0
80					

Log of Drilling Operations

 Boring or Well No. RB-16
 Sheet 1 of 1

 Location _____
 Grid Cell 8, 7
 Coordinates x 7800
 y 6950

 Project McClellan Phase II
 Beginning 10 August 1984 and end
10 August 1984 of drilling operation
 Sampling Interval (Estimated) 5 (ft)
 Type Drill Rig and Operator Dual tube rotary
 Log Recorded By D. Eichmann

 G.L. Elevation 52 ft msl (topo.)

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
50					
55	C			CLAY; as above; silty to sandy clay zone at base.	0.0
60	C			CLAY; as above to approx. 80'; then coarse sand zone, brown, damp.	0.0
65	C			SAND; coarse-grained; poorly sorted; damp; brown.	0.0
70	C			SAND; silty; poorly sorted; wet, tan.	0.0
75		RB-16-1			RB-16-1 (100') T = 21°C pH = 5.2 C = 220 umhos 0.0
80	C			CLAY; silty, hard, slightly damp; brown.	0.0
85	C			SILT; thin gravel zone approx. 107-109'; wet but insufficient water to sample.	0.0
90	C			CLAY; silty, wet; tan.	0.0
95	C			SILT; with some clay; slightly damp; tan.	0.0
100		RB-16-2			

Log of Drilling Operations

 Boring or Well No RB-16
 Sheet 4 of 5

 Location _____
 Grid Cell 8, 7
 Coordinates x 7800
 y 6950

 Project McClellan Phase II
 Beginning 10 August 1984 and end
10 August 1984 of drilling operation
 Sampling Interval (Estimated) 5 (ft)
 Type Drill Rig and Operator Dual Tube Rotary
 Log Recorded By D. Richmann

 G.L. Elevation 52 ft, msl (topo.)

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
119	C			SILT; as above; water-bearing in thin zones.	0.0
120	C			SILT; as above.	0.0
121	C			CLAY; silty, plastic; very moist to saturated in thin zones; tan.	0.0
122	C			CLAY; similar to above with minor coarse sand lenses, silt increasing with depth.	0.0
123	C			SILT; gradational to above; minor water-bearing gravel approx. 140-141.5'.	0.0
124	C			SILT; similar to above; minor water-bearing gravel approx. 143-147'.	0.0
125	C			SILT; with minor sand, damp.	0.0
126	C			SAND; coarse-grained, silty to clayey, with some fine gravel; poorly-sorted; damp.	0.0

RB-16-3

4-3 9/84

Log of Drilling Operations

 Boring or Well No. RP-16
 Sheet 5 of 5

 Location _____
 Grid Cell 8, 7
 Coordinates x 7800
 y 6950


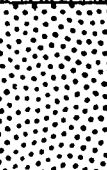
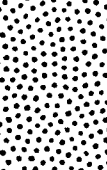
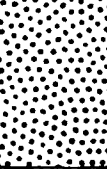
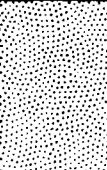
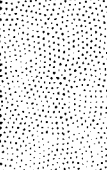


 Project McClellan Phase II
 Beginning 10 August 1981 and end
10 August 1981 of drilling operation

 Sampling Interval (Estimated) 5 (ft)

 Type Drill Rig and Operator Dual Tube Rotary

 Elev. Elevation 52 ft, msl (topo.)

 Log Recorded By D. Pichmann

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
160	C			SAND; as above.	QVM (ppm) 0.0 RB-16-3 (160') T = 18°C pH = 5.6 C = 200 umhos
165	C			GRAVEL; poorly-sorted with clay matrix; wet; red-brown.	0.0
171	C			GRAVEL; similar to above, containing fewer fines with increasing depth.	0.0 Distinctive rounded white clasts in gravel below approx. 173'.
177	C			GRAVEL; moderately well sorted, few fines; highly productive aquifer.	0.0
181	C			SAND; fine to medium-grained; modera- tely sorted; micaceous; very high water production.	0.0
186	C			SAND; as above.	0.0
191	C			SAND; as above.	TD = 200'. Hole grouted with Portland Type I-II cement.
197	C			SAND; as above.	Cement delivered through drill stem from bottom of hole up to surface.

Log of Drilling Operations

 Boring or Well No. 17
 Sheet 1 of 5

 Location _____
 Grid Cell 10, 9
 Coordinates x 9250
 y 8750

 Project McClellan AFB ISP Phase II
 Beginning 8-29-84 and end 8-30-84 of drilling operation
 Sampling Interval (Estimated) Composite 5 (ft)
 Type Drill Rig and Operator Chicago Pneumatic CP200
 Log Recorded By W. Boettner B. Herst

 Ground Level Elevation: 55 ft.MSL (tomo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
0					
1	C			SAND: Clayey, medium to coarse grained, dark red brown	0.01
5					
6	C			SAND: Silty, medium to fine grained, brown	0.14
10					
11	C			SAND: Silty, fine to very fine grained, tan	0.12
15					
16	C			SAND: Silty, gravelly, fine to very fine grained, tan to brown	0.06
20					
21	C			SAND: Clayey, silty, fine to very fine, tan	0.12
25					
26	C			SAND: Silty, clayey, fine to medium grained, reddish brown	0.12
30					
31	C			SAND: Silty, trace of clay, fine to medium grained, reddish brown	0.14
35					
36	C			SAND: Clayey, silty, fine to medium grained, reddish brown	0.08
40					

Log of Drilling Operations

 Boring or Well No. 17
 Sheet 2 of 5

 Location _____
 Grid Cell _____
 Coordinates x _____
 y _____

 Project McClellan AFB IRR Phase II
 Beginning 8-29-84 and end
8-30-84 of drilling operation

 Ground Level Elevation: 55 ft.MSL (top).

 Sampling Interval (Estimated) Composite 5 (ft)
 Type Drill Rig and Operator Chicago Pneumatic CP2100
 Log Recorded By A. Loettner A. Horst

Depth (ft)	Type of Sample Taken	ID No of Sample Taken	Graphic Log	Lithologic Description	Remarks
40					
45	C			SAND: Clayey, fine to medium grained, reddish brown	0.1
50	C			SAND: Clayey, plastic, fine to very fine grained, reddish brown	0.2
55	C			SAND: Clayey, plastic, fine to very fine grained, brown	0.14
60	C			CLAY: Sandy, silty, fine to very fine grained.	0.16
65	C			SILT: Sandy, clayey, light tan	0.0
70	C			SAND: Clayey, silty, very fine grained, dark brown	0.0
75	C			SAND: Clayey, plastic, silty, very fine grained, tan to brown	0.1
80	C			SAND: Clayey, silty, plastic, fine grained, reddish brown	0.02

Log of Drilling Operations

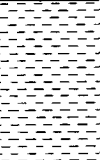
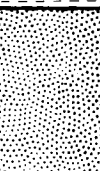
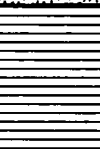

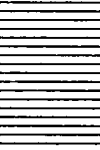
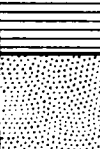

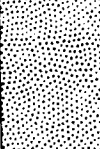
 Boring or Well No. 17
 Sheet 3 of 5

 Location _____
 Grid Cell _____
 Coordinates x _____
 y _____

 Project McClellan AFB IRP Phase II
 Beginning 8-29-84 and end
8-30-84 of drilling operation
 Sampling Interval (Estimated) Composite 5 (ft)

 Ground Level Elevation: 55 ft.MSL (topo).

 Type Drill Rig and Operator Chicago Pneumatic CP200
 Log Recorded By W. Boettner B. Horst

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
80	C			SILT/CLAY: Sandy, dark brown	0.01
85	C			SAND: Clayey, silty, very fine grained, tan to brown	0.02
90	C			CLAY: Sandy, silty, very fine grained, tan to brown	0.01 Trace of water - not recoverable
95	C			CLAY: Sandy, tan to brown	0.02
100	C			CLAY: Silty, sandy	0.00
105	C			SAND: Clayey, silty, fine to very fine grained	0.02
110	C			SAND: Clayey, fine grained	0.01
115	C			SAND: Clayey, plastic, brown	0.0
120	C				

Log of Drilling Operations

 Boring or Well No. 17
 Sheet 4 of 5

 Location _____
 Grid Cell _____
 Coordinates x _____
 y _____

 Project McClellan AFB IIR Phase II
 Beginning 8-29-84 and end 8-30-84 of drilling operation
 Sampling Interval (Estimated) Composite 5 (ft)

 Ground Level Elevation: 55 ft.MSL (toro).

 Type Drill Rig and Operator Chicago Pneumatic (P300)
 Log Recorded By A. Boettner AB. Horst

Depth (ft)	Type of Sample Taken	ID No of Sample Taken	Graphic Log	Lithologic Description	Remarks
120					
	C			CLAY: Silty, sandy, fine to very fine grained, tan	0.01
125					
	C			CLAY: Silty, sandy, plastic, fine to very fine grained, tan	0.00
130					
	C			SILT: Sandy, clayey, fine to very fine grained, brown	0.01
135					
	C			SILT: Sandy, clayey, fine to very fine grained, brown	0.02
140					
	C			SILT: Sandy, fine to very fine grained	0.02 Water sample at 140' pH = 6.4 Conductivity = 230 Temperature = 16°C
145					
	C			CLAY: Sandy, plastic, silty, dark brown	0.01
150					
	C			CLAY: Sandy, plastic, silty, dark brown	0.02
155					
	C			SAND: Clayey, plastic, silty, fine to very fine grained, dark brown	0.12
160					

Log of Drilling Operations


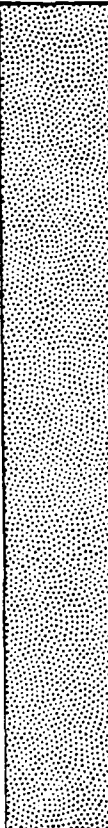
 Boring or Well No. 17
 Sheet 5 of 7

 Location _____
 Grid Cell _____
 Coordinates x _____
 y _____

 Project McClellan AFB IPP Phase II
 Beginning 8-29-84 and end 8-30-83 of drilling operation
 Sampling Interval (Estimated) Composite 5 (ft)

 Ground Level Elevation: 55 ft. MSL (topo).

 Type Drill Rig and Operator Chicago Pneumatic CP2000
 Log Recorded By Boettner 10.1.84

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
160	C			CLAY: Plastic, silty, sandy, brown	0.10
165	C			SAND: Silty, clayey, brown	0.1
170	C			SAND: Silty, clayey, fine to very fine grained, brown	0.2
175	C			SAND: Clayey, silty, micaceous, brown	0.1
180	C			SAND: Silty, micaceous, clayey	0.14
185	C			SAND: Silty, micaceous, clayey, brown	0.12
190	C			CLAY: Sandy, plastic, brown	Water Sample at 190 pH = 6.4 Conductivity = 250 Temperature = 18°C
195	C			CLAY: Sandy, plastic, brown	0.0
200	C			CLAY: Sandy, plastic, brown	0-200' 4 1/2" hole Grouted hole through mail tubes w/ 35 lb. Portland Cement Type I & II
				Total Depth: 200 Feet	0.0

Log of Drilling Operations

 Boring or Well No. RB 18
 Sheet 1 of 5

 Location _____
 Grid Cell 10, 9
 Coordinates x 9650
 y 8250

 Project McClellan AFB IRR Phase II
 Beginning 8-30-84 and end 8-31-84 of drilling operation
 Sampling Interval (Estimated) Composite 5 (ft)

 Ground Level Elevation: 60 ft.MSL (topo).

 Type Drill Rig and Operator Chicago Pneumatic CP2000
 Log Recorded By W. Boettner B. Horst

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
0					ovm(ppm)
5	C			SAND: Clayey, silty, medium to coarse grained	0.0
10	C			SAND: Medium to coarse, reddish brown	0.0
15	C			SAND: Clayey, fine to coarse grained, reddish brown	0.01
20	C			SAND: Clayey, fine to coarse grained, reddish brown	0.0
25	C			SAND: Silty, clayey, fine to coarse grained, reddish brown	0.0
30	C			SAND: Clayey, fine to medium grained, reddish brown	0.0
35	C			SAND: Clayey, plastic, fine to medium grained, reddish brown	0.02
40	C			SAND: Silty, clayey, fine to medium grained	0.00

Log of Drilling Operations

 Boring or Well No. RB 18
 Sheet 2 of 5

 Location _____
 Grid Cell 10, 9
 Coordinates x 9650
 y 8250

 Project McClellan AFB IED Phase II
 Beginning 8-30-84 and end 8-31-84 of drilling operation
 Sampling Interval (Estimated) Composite 3 (ft)

 Ground Level Elevation: 60 ft.MSL (topo).

 Type Drill Rig and Operator Chicago Pneumatic CP2000
 Log Recorded By W. Boettner

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
40					
42	C			SAND: Silty, clayey, fine to very fine grained, reddish brown	0.26
45					
48	C			SAND: Silty, clayey, fine to very fine grained, reddish brown	0.18
50					
52	C			CLAY: Silty, sandy, fine to very fine brown	0.16
55					
58	C			CLAY: Plastic, silty, sandy, fine to very fine grained, brown	0.24
60					
62	C			SAND: Clayey, fine to very fine grained brown	0.02
65					
68	C			SAND: Clayey, plastic, fine to very fine grained, reddish brown	0.14
70					
72	C			SAND: Clayey, fine to very fine grained brown to tan	0.12
75					
78	C			SILT: Sandy, clayey, very fine to medium grained, brown	0.08
80					

Log of Drilling Operations

 Boring or Well No. RB 18
 Sheet 1 of 1

 Location _____
 Grid Cell 10, 9
 Coordinates x 9650
 y 8250

 Project McClellan AFB IMP Phase II
 Beginning 8-30-84 and end 8-31-84 of drilling operation
 Sampling Interval (Estimated) Composite 5 (ft)

 Ground Level Elevation: 60 ft.MSL (cone).

 Type Drill Rig and Operator Chicago Pneumatic CP300
 Log Recorded By W. Boettner AB. Horst

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
80					
	C			SAND: Clayey, silty (moist)	0.02
85					
	C			CLAY: Silty, sandy, plastic, brown	0.02
90					
	C			SAND: Clayey, fine to medium grained, brown	0.04
95					
	C			SAND: Silty	0.12
100					
	C			GRAVELS: Sandy, medium to coarse grained	0.04
105					
	C			GRAVEL: Sandy, medium to coarse grained	0.18
110					
	C			CLAY: Sandy, plastic	0.02
115					
	C			CLAY: Silty, sandy, dark brown	0.06
120					

Log of Drilling Operations

 Boring or Well No. 18
 Sheet 1 of 1

 Location _____
 Grid Cell 10, 9
 Coordinates x 9650
 y 8250

 Project McClellan AFB ISF Phase II
 Beginning 8-30-84 and end 8-31-84 of drilling operation
 Sampling Interval (Estimated) Composite 2 (ft)

 Ground Level Elevation: 60 ft. MSL (topo).

 Type Drill Rig and Operator Chicago Pneumatic CP-100
 Log Recorded By N. Boettner A. Horst

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
122	C			CLAY: Silty, sandy dark brown	0.18
123	C			CLAY: Sandy, silty	0.10
100	C			CLAY: Sandy, silty, dark brown	0.08
135	C			SILT: Sandy, clayey, dark tan	0.02 Water sample at 140' pH = 6.4 Conductivity = 240 Temperature = 20°C
140	C			CLAY: Silty, sandy, dark brown	0.01
141	C			CLAY: Plastic, silty, sandy	0.04
104	C			CLAY: Plastic, gravelly, sandy, fine to coarse grained, dark brown	0.04
145	C			CLAY: Sandy, gravelly	0.02

Log of Drilling Operations

 Boring or Well No. 18
 Sheet 3 of 7

 Location _____
 Grid Cell 10, 9
 Coordinates x 9650
 y 8250

 Project McClellan AFB IAD Phase II
 Beginning 8-30-84 and end
8-31-84 of drilling operation

 Ground Level Elevation: 60 ft. MSL (topo).

 Sampling Interval (Estimated) Composite (ft)
 Type Drill Rig and Operator Chicago Pneumatic CP1000
 Log Recorded By Bourbon 10. 1984

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
160	C			CLAY: Sandy, fine to coarse grained, dark brown	0.2
165	C			CLAY: Plastic, sandy, gravelly	0.22
170	C			CLAY: Sandy, micaceous, brown	0.18
175	C			CLAY: Plastic, sandy, micaceous, brown	0.14
180	C			SAND: Micaceous, clayey, brown	0.08
185	C			SAND: Micaceous, clayey, brown	0.06
190	C			SAND: Clayey, micaceous, increasing clay with depth	0.02
195	C			SAND: Clayey, micaceous (moist)	0.04
200	C			Total Depth: 200 Feet	0-200' 4 1/2" hole drilled hole through fill times 8 sacks Portland Cement Type I 4 1/2"

Log of Drilling Operations

 Boring or Well No. RB-19
 Sheet 1 of 5

 Location 3030 Orange Grove
 Grid Cell 16:09
 Coordinates x 15,500'
 y 8,040'

 Project McClellan AFB IEP Phase II
 Beginning 27 August 1984 and end
 28 August 1984 of drilling operation
 Sampling Interval (Estimated) Composite 5 (ft)
 Type Drill Rig and Operator Drill Tek D400 S. Smith
 Log Recorded By R.A. Belan

 Ground Level Elevation: apx. 63ft. MSL (tomo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
0					Drilled by the dual tube air rotary method.
5	C			SILT, sand, gravels and clay, brown, unconsolidated, dry.	OVM (ppm) 0.4
10	C			SAND, FN to VF, some coarse sand, tan, unconsolidated, dry.	
15	C			SILT and SAND, VF, dark tan, unconsoli- dated, dry.	0.5
20	C			SILT, minor clay, light tan, unconsoli- dated, dry. Sample difficult to catch.	
25	C			SAND, FN to VF, minor silt, tan, uncon- solidated, dry.	0.2
30	C			SAND, FN to VF, minor silt, tan, uncon- solidated, dry.	0.2
35	C			SAND, FN to VF, minor silt, grayish tan, unconsolidated, dry. Trace mica at 33', and turned golden brown.	
40	C			SILT, unconsolidated, fresh cut looks golden brown, trace mica (gold), dry.	0.2

Log of Drilling Operations

 Borehole Well No. RB-19
 Sheet 1 of 2

 Location 3030 Orange Grove
 Grid Cell 16:09
 Coordinates x 15,400'
 y 8,040'

 Project McClellan AFB 1984 Phase II
 Beginning 27 August 1984 and ending 28 August 1984 of drilling operation
 Sampling Interval (Estimated) 10' to 15'
 Type Drill Rig and Operator Drill Tek 444
 Log Recorded By R.A. Selin

 Ground Level Elevation: apx. 63 ft. MSL (tore).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
40					
42	C			CLAY; semi-plastic, brown.	0
45					
48	C			SAND and CLAY, brown, slight moisture, sand VF, clay begins at 48 ft.	0
50					
52	C			CLAY, minor sand, light brown.	0.5
55					
58	C	RB-19A		CLAY, minor sand, light brown, some moisture.	10
60					
62	C			SAND, VF, and silt, unconsolidated, slight moisture.	1.0
65					
68	C			SAND and CLAY; FN to VF, unconsolidated, tan (sand), brown (clay).	1.1
70					
72	C			SAND and SILT, FN to VF, tan and brown, unconsolidated.	1.2
75					
78					
80				SILT, tan, unconsolidated, fine sand to silt sample.	1.0

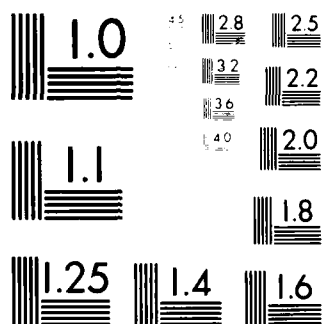
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VOLUME 2(U) RADIAN CORP AUSTIN TX R W BAUER MAY 85
F33615-83-D-4001

INSTALLATION RESTORATION PROGRAM PHASE II (STAGE 2-1)
VOLUME 2(U) RADIAN CORP AUSTIN TX R W BAUER MAY 85
F33615-83-D-4001

F/G 13/2

INSTALLATION RESTORATION PROGRAM PHASE II (STAGE 2-1)
VOLUME 2(U) RADIAN CORP AUSTIN TX R W BAUER MAY 85
F33615-83-D-4001

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MICROCOPY RESOLUTION TEST CHART
 NATIONAL BUREAU OF STANDARDS-1963-A

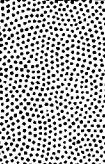
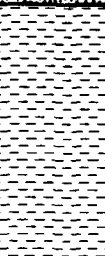
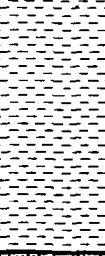
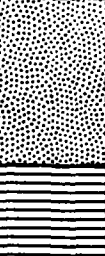





Log of Drilling Operations

 Boring or Well No. RB-19
 Sheet 3 of 5

 Location 3030 Orange Grove
 Grid Cell 16:09
 Coordinates x 15,400'
 y 8,040'

 Project McClellan AFB IRP Phase II
 Beginning 27 August 1984 and end
28 August 1984 of drilling operation
 Sampling Interval (Estimated) Composite 5 (ft)
 Type Drill Rig and Operator Drill Tek D40K/S. Smith
 Log Recorded By R.A. Belan

 Ground Level Elevation: apx. 63ft. MSL (toro).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
80	C			SAND and SILT, VF, unconsolidated, tan, slight moisture.	4.0
85	C			SILT, unconsolidated, dry, tan.	0.4
90	C			SILT and SAND, VF, tan, slight moisture, unconsolidated.	6.0
95	C			SILT, tan, unconsolidated, some moisture.	Drill pipe got stuck. Water appears to be from about 95-105'. 21
100	C			SAND and GRAVEL, Med. to VF, tan (sand) dark brown almost black (fine gravels), unconsolidated, dry.	2.0
105	C			CLAY; brown, slight moisture.	1.2
110	C			CLAY; brown (sample wet as driller had to add some water to cut it).	8/28/84-Took water sample at 120'. W.L.: 95' BGL; T: 21°C; C: 485; pH: 4.5. (Water may be from approx. 105'.)
115	C			CLAY; same (no sample).	
120	G	RB-19-1			

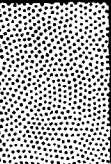

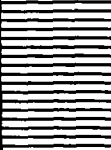


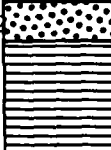



Log of Drilling Operations

 Boring or Well No. RB-19
 Sheet 4 of 5

 Location _____
 Grid Cell 16:09
 Coordinates x 15,400'
 y 8,040'

 Project McClellan AFB IRP Phase II
 Beginning 27 August 1984 and end
28 August 1984 of drilling operation
 Sampling Interval (Estimated) Composite 5 (ft)
 Type Drill Rig and Operator Drill Tek D40K/S. Smith
 Log Recorded By R.A. Belan

 Ground Level Elevation: apx. 63 ft. MSL (toro).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
120	C			SAND, FN to VF, unconsolidated, tan and brown, slight moisture (no free water).	0.8
125	C			CLAY, sandy, reddish brown, slight moisture (no free water).	0.6
130	C			CLAY and SILT, light brown, unconsolidated, silt dry, clay plastic.	1.2
135	C			CLAY and SILT, light brown, unconsolidated clay feels damp. No free water.	3.6
140	G	RB-19-2		GRAVEL (approx. 1'); med-coarse, angular to subangular, unconsolidated, water, mottled brown.	Sieve analysis indicates sands. Water came up to 111'. T: 23°C; C: 210; pH: 6.4.
145	-			CLAY; brown, moist (no sample).	
150	C			CLAY and SAND, clay brown moist w/sand stringers, FN-VF, unconsolidated.	5.0
155	C			CLAY and SAND, same.	9.5
160	C			CLAY, brown, moist.	18.0


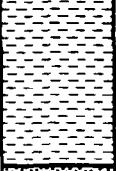
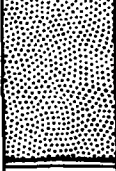

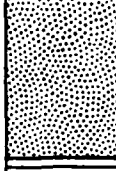

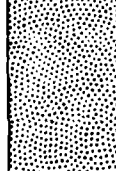
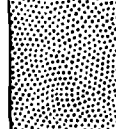
Log of Drilling Operations

 Boring or Well No. RB-19
 Sheet 5 of 5

 Location _____
 Grid Cell 16:09
 Coordinates x 15,400'
 y 8,040'

 Project McClellan AFB IRP Phase II
 Beginning 27 August 1984 and end
28 August 1984 of drilling operation
 Sampling Interval (Estimated) Composite 5 (ft)
 Type Drill Rig and Operator Drill Tek D40K/S. Smith
 Log Recorded By R.A. Belan

 Ground Level Elevation: apx. 63 ft. MSL (tomo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
160	C			CLAY and SILT; brown, moist.	39.0 water felt cooler at 160'. Could not get a temperature.
165	C			SILT and CLAY, minor sand, VF, unconsolidated, brown, some moisture.	18.0
170	C			SAND and SILT, FH-VF, unconsolidated (silt white and dry) some clay; gravel @ 173', stringers, water, trace mica (gold).	10.0
175	C			CLAY; brown, stringers (VF), unconsolidated.	WL: 122' BGL; T: 27°C; pH: 7.2.
180	C	RB-19-3		SAND, FN-VF, small gravel, slightly golden brown, unconsolidated.	Lots of water, probably from 180-185'.
185	C			CLAY and SILT @ 187-191', some moisture, golden brown, unconsolidated (silt).	80
190	C			SAND, Med-FN, mottled brown w/black, moderate amount of mica (gold flakes) lots of water, unconsolidated.	Temperature of running water: 27°C.
195	C			SAND, same.	Water from 190-200' Grouted hole through dual tubes w/38 sacks Portland Cement Type I & II
200		RB-19-4		Total Depth: 200 Feet	

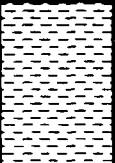
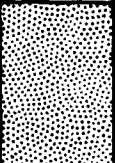
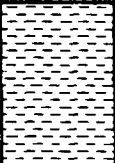

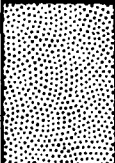
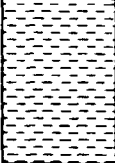


Log of Drilling Operations

 Boring or Well No. RB-20
 Sheet 1 of 5

 Location McClellan AFB SE Corner
 Grid Cell 16:10
 Coordinates x 15,740'
 y 9,710'

 Project McClellan AFB IRP Phase II
 Beginning 29 August 1984 and end
29 August 1984 of drilling operation
 Sampling Interval (Estimated) Composite 5 (ft)
 Type Drill Rig and Operator Drill Tek D40K/S. Smith
 Log Recorded By R.A. Belan

 Ground Level Elevation: apx. 68 ft. MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
0	G			SILT and CLAY, tan.	Drilled by the dual tube air rotary method. OVM (ppm) 0.1 (background)
5	C			SAND and CLAY, VF, tan, unconsolidated.	1.0
10	C			SILT, tan, unconsolidated, dry.	2.5
15	C			CLAY and SILT, tan, unconsolidated.	3.0 (sample is wet will drill water)
20	C			SAND, FN-VF, tan, unconsolidated, dry.	1.8
25	C			SILT and SAND, VF, light brown, uncon- solidated, some moisture.	1.5 0.5 (background)
30	C			CLAY, light brown, damp.	Driller cut w/water 15.0
35	C			CLAY, light brown.	

Log of Drilling Operations

 Boring or Well No. RB-20
 Sheet 2 of 5

 Location McClellan AFB SE Corner
 Grid Cell 16:10
 Coordinates x 15,740'
 y 9,710'

 Project McClellan AFB IRP Phase II
 Beginning 29 August 1984 and end
29 August 1984 of drilling operation
 Sampling Interval (Estimated) Composite 5 (ft)
 Type Drill Rig and Operator Drill Tek D40K/S. Smith
 Log Recorded By R.A. Belan

 Ground Level Elevation: apx. 68 ft. MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
40					
45	C			SAND and SILT, VF-FN, reddish brown, unconsolidated, some moisture.	3.0
50	C			SAND and SILT, VF, reddish brown and tan, unconsolidated, some moisture.	3.8
55	C			SAND and SILT, FN-VF, tan, unconsolidated, dry.	3.8
60	C			SAND and SILT, FN-VF, tan, unconsolidated.	3.8 0.7 (background)
65	C			CLAY and SAND, VF, tan, unconsolidated, dry.	2.9
70	C			CLAY and SAND, VF, brown, unconsolidated, dry.	
75	C			CLAY and SAND, VF, brown, unconsolidated, dry.	
80	C			CLAY and GRAVEL, FN-Med, unconsolidated, dark brown (almost black), dry.	3.2

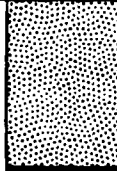
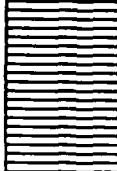

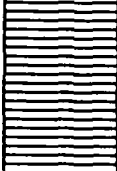

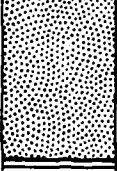

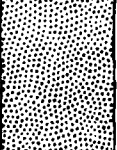
Log of Drilling Operations

 Boring or Well No. RB-20
 Sheet 3 of 5

 Location McClellan AFB SE Corner
 Grid Cell 16:10
 Coordinates x 15,740'
 y 9,710'

 Project McClellan AFB IRP Phase II
 Beginning 29 August 1984 and end
29 August 1984 of drilling operation
 Sampling Interval (Estimated) Composite 5 (ft)
 Type Drill Rig and Operator Drill Tek D40K/S. Smith
 Log Recorded By R.A. Belan

 Ground Level Elevation apx. 68 ft.MSL (toro).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
80	C			SAND and SILT, VF, unconsolidated, dry, tan.	0.8
85	C			CLAY and SAND, VF, unconsolidated, light brown.	Driller cut/water.
90	C			CLAY and SAND, VF, unconsolidated, light brown.	Driller cut w/water
95	C			CLAY and SAND, VF, unconsolidated, clay is hard, light brown.	Drilling slow due to hard clay, cut w/water.
100	C			CLAY, hard, brown.	0.2 (background)
105	C			SAND and CLAY, VF, unconsolidated, brown.	9.0
110	C			CLAY; brown, some sand, unconsolidated.	Driller cut w/ water.
115	C			SAND, Med-FN, unconsolidated, light brown.	Driller cut w/water
120	C				





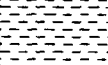
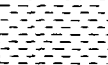
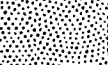

Log of Drilling Operations

 Boring or Well No. RB-20
 Sheet 4 of 5

 Location McClellan AFB SE Corner
 Grid Cell 16:10
 Coordinates x 15,740'
 y 9,710'

 Project McClellan AFB IRP Phase II
 Beginning 29 August 1984 and end
29 August 1984 of drilling operation
 Sampling Interval (Estimated) Composite 5 (ft)
 Type Drill Rig and Operator Drill Tek D40K/S. Smith
 Log Recorded By R.A. Belan

 Ground Level Elevation: apx. 68 ft. MSL (toro).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
120	C	RB-20-1		CLAY, SAND, GRAVEL; light brown.	
125					
130	C			CLAY, SAND, and GRAVEL; brown, uncon- solidated.	Trace water @ 130'.
135	C			CLAY, SAND, GRAVEL; brown, unconsoli- dated.	Water
140	C			Same	Obvious water from about 30-140'. Fluid level: 103' BGL; T: 23°C; C: 185; pH: 7.4.
145	C			SILT and CLAY, unconsolidated, tan to brown, silt, dry, clay slight moisture.	1.5
150	C	RB-20-2		Same, no sample.	
155	C			SAND, Med., mottled brown, unconsoli- dated.	No free water. 1.5
160	C			CLAY and SAND, VF, brown, plastic.	Fluid level: 103'; T: 23°C; C: 320; pH: 7.4.

Log of Drilling Operations

 Boring or Well No. RB-20
 Sheet 5 of 5

 Location McClellan AFB SE Corner

 Grid Cell 16:10

 Coordinates x 15,740'

 y 9,710'

 Project McClellan AFB IRP Phase II

 Beginning 29 August 1984 and end

29 August 1984 of drilling operation

 Sampling Interval (Estimated) Composite 5 (ft)

 Ground Level Elevation: apx. 68 ft. MSL (topo).

 Type Drill Rig and Operator Drill Tek D40K/S. Smith

 Log Recorded By R.A. Belan

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
160	C			CLAY; hard, brown.	Driller cut w/water.
165					
170	C			CLAY and SAND, brown, hard.	Driller cut w/water.
175	C			CLAY and SAND; brown, hard, water, some gravel.	
180	C	RB-20-3		CLAY and SAND, brown, FN-VF, unconsolidated.	Fluid level: 106' BGL; T: 23°C; C: 300; pH: 7.6.
185	C			CLAY and SAND, brown FN-VF, unconsolidated, turned golden @ approx. 83'.	
190	C			Same.	Water feels colder when small water zones encountered.
195	C	RB-20-4		Same.	
200	C	RB-20-5		SAND, Med-FN, angular to sub-angular. mica (gold), unconsolidated. Total Depth: 200 Feet	Fluid level: 136' BGL. T: 25°C; C: 190; pH: 7.4. Grouted hole through dual tubes w/ 39 sacks Portland Cement Type I & II

Log of Drilling Operations

 Boring or Well No. 21
 Sheet 1 of 5

 Location _____
 Grid Cell 11, 22
 Coordinates x 10250
 y 21650

 Project McClellan AFB IRP Phase II
 Beginning 8-17-84 and end 8-17-84 of drilling operation
 Sampling Interval (Estimated) Composite 5 (ft)
 Type Drill Rig and Operator Chicago Pneumatic CP2000
 Log Recorded By W. Boettner B. Horst

 Ground Level Elevation: 66 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
0					ovm(ppm)
	C			SAND: Silty, fine to very fine, brown	0.1
5					
	C			SAND: Silty, fine to very fine, brown	0.1
10					
	C			SAND: Silty, fine to very fine, brown	0.1
15					
	C			SILT: Clayey, sandy, clay somewhat plastic	0.05
20					
	C			SILT: Clayey, silt, brown	0.05
25					
	C			CLAY: Silty, brown	0.05
30					
	C			SILT: Sandy, clayey, tan	0.04
35					
	C			SILT: Sandy, clayey, tan	0.05
40					

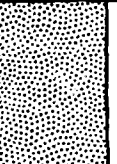
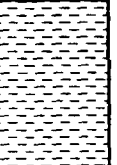

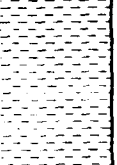
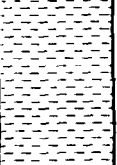
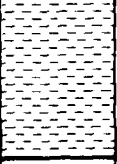


Log of Drilling Operations

 Boring or Well No. 21
 Sheet 2 of 5

 Location _____
 Grid Cell _____
 Coordinates x _____
 y _____

 Project McClellan AFB IRP Phase II
 Beginning 8-17-84 and end
8-17-84 of drilling operation
 Sampling Interval (Estimated) Composite 5 (ft)
 Type Drill Rig and Operator Chicago Pneumatic CP2000
 Log Recorded By W. Boettner B. Horst

 Ground Level Elevation: 66 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
40					
	C			SAND: Clayey, medium to coarse grain, FeO _x staining, red brown	0.04
45					
	C			SILT: Clayey, sandy, fine to very fine grain, brown	0.02
50					
	C			CLAY: Sandy, silty, brown	0.05
55					
	C			SILT: Sandy, clayey, reddish brown	0.1
60					
	C			SILT: Clayey, plastic, dark brown	0.02
65					
	C			SILT: Clayey, brown	0.03
70					
	C			CLAY: Silty, sandy, medium to coarse grain, brown	0.1
75					
	C			CLAY: Silty, brown	0.1
80					


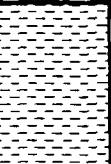
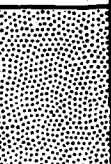
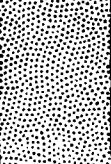

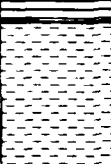

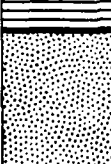
Log of Drilling Operations

 Boring or Well No 21
 Sheet 3 of 5

 Location _____
 Grid Cell _____
 Coordinates x _____
 y _____

 Project McClellan AFB IRP Phase II
 Beginning 8-17-84 and end 8-17-84 of drilling operation
 Sampling Interval (Estimated) Composite 5 (ft)
 Type Drill Rig and Operator Chicago Pneumatic CP200
 Log Recorded By W. Boettner / B. Horst

 Ground Level Elevation: 66 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
80					
	C			CLAY: Silty, hard, brown	0.05
85					
	C			SILT: Clayey, brown	0.12
90					
	C			SAND: Clayey, silty, fine to very fine grain, brown	0.02
95					
	C			SAND: Clayey, silty, fine to very fine grain, brown	0.1
100					
	C			CLAY: Silty, sandy, moist	0.4
105					
	C			SILT: Sandy, fine to very fine grain, brown	0.1
110					
	C			CLAY: Silty, sandy, brown	0.05
115					
	C			SAND: Silty, clayey, fine to medium grain, brown	0.02
120					

Log of Drilling Operations

 Boring or Well No. 21
 Sheet 4 of 5

 Location _____
 Grid Cell _____
 Coordinates x _____
 y _____

 Project McClellan AFB IFF Phase II
 Beginning 8-17-84 and end 8-17-84 of drilling operation
 Sampling Interval (Estimated) Composite 5 (ft)
 Type Drill Rig and Operator Chicago Pneumatic CP300
 Log Recorded By W. Boettner B. Horst

 Ground Level Elevation: 66 ft.MSL (toro).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
120					
	C			SAND: Silty, fine to very fine grain, brown	0.02
125					
	C			SAND: Silty, clayey, fine to very fine grain, brown	0.01
130					
	C			SAND: Silty, clayey, fine to medium grain, brown	0.01
135					
	C			SAND: Silty, medium to coarse grain, abundant water (~250 GPM)	0.01 Water sample at 140' pH = 4.5 Temperature = 21°C Conductivity = 200
140					
	C			SAND: Clayey, fine to medium grain, brown	0.01
145					
	C			SAND: Gravelly, coarse to very coarse clean quartz sand	0.02
150					
	C			SAND: Silty, clayey, medium to coarse grain, clay increases with depth	0.01
155					
	C			SAND: Micaceous, medium to fine grain, brown, small amount of water	0.02
160					

Log of Drilling Operations

 Boring or Well No. 21
 Sheet 5 of 5

 Location _____
 Grid Cell _____
 Coordinates x _____
 y _____

 Project McClellan AFB IRP Phase II
 Beginning 8-17-84 and end 8-17-84 of drilling operation
 Sampling Interval (Estimated) Composite 5 (ft)

 Ground Level Elevation: 66 ft. MSL (topo).

 Type Drill Rig and Operator Chicago Pneumatic CP2000
 Log Recorded By V. Boettner B. Horst

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
160	C			SAND: Silty, fine to very fine grain, brown	0.02 Water sample at 160' pH = 4.5 Temperature = 22°C Conductivity = 200
165	C			SAND: Silty, coarse, trace amount of clay	0.01
170	C			SAND: Silty, medium to coarse, brown	0.02
175	C			SAND: Silty, medium to coarse, clay <10%	0.01
180	C			SAND: Clayey, medium to coarse grain, brown	0.01
185	C			CLAY: Sandy, fine to medium grain, clay, plastic, tan	0.02
190	C			Total Depth: 190 feet	
195	C				0.02 0-190' 4 1/2" hole Grouted hole through dual tubes w 31 sacks Portland Cement Type I & II
200	C				

Log of Drilling Operations

 Boring or Well No. 22
 Sheet 1 of 5

 Location _____
 Grid Cell 3,17
 Coordinates x 2950
 y 16950

 Project McClellan AFB IRP Phase II
 Beginning 8-22-84 and end 8-22-84 of drilling operation
 Sampling Interval (Estimated) Composite 5 (ft)
 Type Drill Rig and Operator Chicago Pneumatic CP200C
 Log Recorded By W. Boettner B. Horst

 Ground Level Elevation: 45 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
0					ovm(ppm)
	C			SAND: Silty, fine to medium, tan to brown	0.0
5					
	C			SAND: Medium to coarse, brown	0.04
10					
	C			SAND: Silty, clayey, poorly sorted, subangular to subrounded	0.2
15					
	C			SAND: Silty, clayey, fine to medium grained, increasing clay content, tan	0.3
20					
	C			SAND: Clayey, subangular to subrounded grains, Biotite, Hornblende	0.1
25					
	C			SILTY SAND: Clayey, fine to very fine grain, light tan	0.12
30					
	C			SAND: Silty, clayey, fine to medium grain, angular to subangular, micaceous (Muscovite), red brown	0.05
35					
	C			SAND: Trace of silt and clay, medium to coarse grained, poorly sorted, brown	0.02
40					

Log of Drilling Operations

 Boring or Well No. 22
 Sheet 2 of 5

 Location _____
 Grid Cell _____
 Coordinates x _____
 y _____

 Project McClellan AFB IRP Phase II
 Beginning 8-22-84 and end 8-22-84 of drilling operation
 Sampling Interval (Estimated) Composite 3 (ft)
 Type Drill Rig and Operator Chicago Pneumatic CP200
 Log Recorded By M. Boettner B. Horst

 Ground Level Elevation: 45 ft. MSL (toro).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
40					
	C			SAND: Clayey, silty, fine to very fine grained, tan to grayish	0.01
45					
	C			SAND: Silty, fine to medium grained, poorly sorted, angular	0.02
50					
	C			SAND: Clayey, plastic, fine to medium grained, brown	0.02
55					
	C			SAND: Clayey, silty, fine to very fine grained, subangular to subrounded, brown	0.08
60					
	C			SAND: Clayey, silty, siltstone, gravels, fine grained, increasing clay with depth	0.06
65					
	C			CLAY: Sandy, fine to very fine grained, plasticity high	0.1
70					
	C			SAND: Clayey, fine to medium grained, subangular to subrounded, poorly sorted, micaceous (Muscovite)	0.04
75					
	C			SAND: Clayey, silty, increasing clay plasticity, dark brown	0.04
80					

Log of Drilling Operations

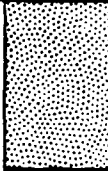

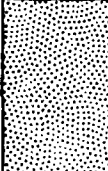
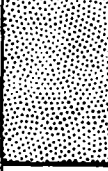

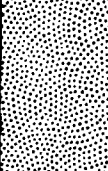
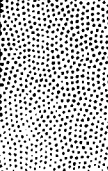
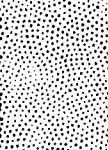
 Boring or Well No. 22
 Sheet 3 of 5

 Location _____
 Grid Cell _____
 Coordinates x _____
 y _____

 Project McClellan AFB IRP Phase II
 Beginning 8-22-84 and end
8-22-84 of drilling operation
 Sampling Interval (Estimated) Composite 5 (ft)

 Ground Level Elevation: 45 ft. MSL (topo).

 Type Drill Rig and Operator Chicago Pneumatic CP2000
 Log Recorded By W. Boettner / B. Horst

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
80	C			SAND: Clayey, fine to medium grained, subangular to subrounded	0.01
85	C			CLAY: Silty, sandy, fine to medium grained, high plasticity, dark brown	0.1
90	C			SAND: Clayey, silty, fine to very fine grained, subangular quartz, brown	0.08
95	C			SAND: Silty, clayey, gravelly, fine to medium grained	0.08 Water sample pH = 5.4 Conductivity = 260 Temperature = 22°C
100	C			CLAY: Sandy, plasticity high, brown	0.06
105	C			SAND: Clayey, fine grained, plastic	0.08
110	C			SAND and GRAVEL: Clayey, fine to medium grained, brown	0.02
115	C			SAND: Silty, clayey, fine to very fine grained, subangular to subrounded	0.14
120	C				

Log of Drilling Operations


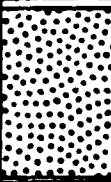


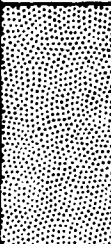

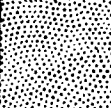

 Boring or Well No. 22
 Sheet 4 of 5

 Location _____
 Grid Cell _____
 Coordinates x _____
 y _____

 Project McClellan AFB IRP Phase II
 Beginning 8-22-84 and end
8-22-84 of drilling operation
 Sampling Interval (Estimated) Composite 5 (ft)

 Ground Level Elevation: 45 ft.MSL (toro).

 Type Drill Rig and Operator Chicago Pneumatic CP200
 Log Recorded By W. Boettner B. Horst

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
120					
	C			CLAY: Plastic changing to fine grained sand	0.06
125					
	C			GRAVEL: Clayey, sandy, brown	0.02
130					
	C			CLAY: Gravelly, brown	0.02
135					
	C			CLAY: Clay and sand, fine to medium grained with some small gravels	0.08
140					
	C			SAND: Coarse sand and gravel, water	0.02 Water sample pH = 5.4 Conductivity = 240 Temperature = 22°C
145					
	C			SAND: Coarse sand and gravel, silty, brown, water	0.02
150					
	C			SAND: Coarse sand and gravel, water	0.01
155					
	C			SAND: Silty, clayey, fine to coarse grained with some gravels	0.01
160					

Log of Drilling Operations

 Boring or Well No. 22
 Sheet 5 of 5

 Location _____
 Grid Cell _____
 Coordinates x _____
 y _____

 Project McClellan AFB IRP Phase II
 Beginning 8-22-84 and end 8-22-84 of drilling operation
 Sampling Interval (Estimated) Composite 5 (ft)
 Type Drill Rig and Operator Chicago Pneumatic CP2000
 Log Recorded By L. Boettner B. Horst

 Ground Level Elevation: 45 ft.MSL (tomo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
160	C			SAND: Silty, coarse grained, dark grains (Biotite, Hornblende) about 15%	0.0
165	C			SAND: Silty, medium to coarse, poorly sorted, brown	0.0
170	C			SAND: Silty, clayey, medium grained, poorly sorted	0.06
175	C			SAND and GRAVEL: Silty, clayey, medium to coarse grained, brown to tan, water	0.04 Water sample pH = 6.2 Conductivity = 200 Temperature = 18°C
180	C			SAND: Clayey, silty, gravelly, medium to coarse grained	0.02
185	C			SAND: Clayey, gravelly, medium to coarse grained	0.1
190	C			CLAY: Sandy, gravelly, clay increasing with depth, brown	0.2
195	C			CLAY: Sandy, gravelly	0.1 0-200' 4 1/2" hole Grouted hole through dual tubes w/ 39 sacks Portland Cement Type I & II
200				Total Depth: 200 Feet	

Log of Drilling Operations

 Boring or Well No. 23
 Sheet 1 of 5

 Location _____
 Grid Cell 7 12
 Coordinates x 6400
 y 11950

 Project McClellan AFB IRP Phase II
 Beginning 8-24-84 and end 8-24-84 of drilling operation
 Sampling Interval (Estimated) Composite 5 (ft)
 Type Drill Rig and Operator Chicago Pneumatic CP2000
 Log Recorded By W. Boettner B. Horst

 Ground Level Elevation: 50 ft.MSL (ortho).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
0					ovm(ppm)
5	C			SAND: Silty, fine to very fine, tan to brown	0.0
10	C			SAND: Clayey, silty, fine to very fine grain, increasing clay with depth, light brown	0.02
15	C			SAND: Clayey, gravelly, fine to medium grain, clay highly plastic	0.01
20	C			SAND: Silty, clayey, fine to medium grain, subangular to subrounded, brown	0.01
25	C			SAND: Silty, fine to coarse grain, subangular to subrounded, brown	0.01
30	C			SAND: Clayey, silty, fine to medium grain, subangular to subrounded, tan	0.01
35	C			SAND: Clayey, fine to medium grain, plastic, tan to brown	0.01
40	C			CLAY: Sandy, silty, fine to very fine grain, plastic, brown	0.01

Log of Drilling Operations

 Boring or Well No. 23
 Sheet 2 of 5

 Location _____
 Grid Cell _____
 Coordinates x _____
 y _____

 Project McClellan AFB IRR Phase II
 Beginning 8-24-84 and end 8-24-84 of drilling operation
 Sampling Interval (Estimated) Composite 5 (ft)
 Type Drill Rig and Operator Chicago Pneumatic CP2000
 Log Recorded By W. Boettner B. Horst

 Ground Level Elevation: 50 ft. MSL (toro).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
40					
45	C			SAND: Silty, fine to very fine grain, Quartz, Biotite, Hornblende, brown	0.01
50	C			SAND: Fine to very fine, angular to subangular, poorly sorted, tan	0.01
55	C			SAND: Silty, clayey, fine to very fine, angular to subangular, brown	0.01
60	C			SAND: Silty, clayey, fine to very fine grain, brown, clay increasing with depth.	0.01
65	C			SAND: Clayey, trace of silt, medium to very fine grain, poorly sorted, brown	0.01
70	C			SAND: Clayey, silty, fine to very fine grain, subangular to rounded, poorly sorted, dark brown	0.01
75	C			SAND: Silty, clayey, fine to very fine, poorly sorted, brown	0.01
80	C			SAND: Silty, fine to very fine, subangular to subrounded, poorly sorted, red brown	0.02

Log of Drilling Operations

 Boring or Well No. _____
 Sheet 3 of 5

 Location _____
 Grid Cell _____
 Coordinates x _____
 y _____

 Project McClellan AFB IRP Phase II
 Beginning 8-24-84 and end 8-24-84
 of drilling operation
 Sampling Interval (Estimated) Composite 5 (ft)

 Ground Level Elevation: 50 ft.MSL (topo).

 Type Drill Rig and Operator Chicago Pneumatic CP200
 Log Recorded By W. Boettner B. Horst

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
80					
	C			SAND: Silty fine to very fine, clayey, red brown	0.01
85					
	C			CLAY: Fine to very fine sandy, moist	0.0
90					
	C			CLAY: Fine to medium sandy, plastic, brown	0.02
95					
	C			CLAY: Sandy, fine to very fine, brown	0.01 Water sample at 100' pH = 5.8 Conductivity = 260 Temperature = 18°C
100					
	C			CLAY: Sandy, plastic, brown	0.02
105					
	C			SILTY CLAY: Sandy, fine to medium, gravelly	0.01
110					
	C			SILTY CLAY: Sandy, gravels up to 2 mm, brown	0.0
115					
	C			SILTY CLAY: Sandy, fine to medium, gravels	0.01
120					

Log of Drilling Operations

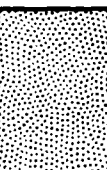
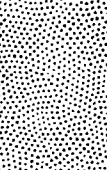
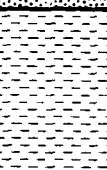
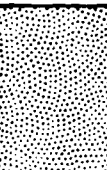




 Boring or Well No. 23
 Sheet 4 of 5

 Location _____
 Grid Cell _____
 Coordinates x _____
 y _____

 Project McClellan AFB IEP Phase II
 Beginning 8-24-84 and end
8-24-84 of drilling operation
 Sampling Interval (Estimated) Composite 5 (ft)

 Ground Level Elevation: 50 ft. MSL (topo).


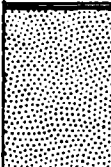
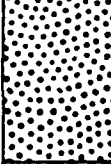
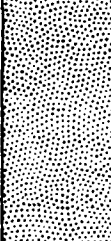
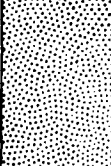
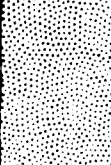
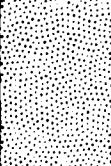

 Type Drill Rig and Operator Chicago Pneumatic CP20
 Log Recorded By W. Boettner B. Horst

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
120	C			SAND: Clayey, silty, subangular to subrounded, poorly sorted	0.0
125	C			SAND and GRAVEL: Silty, plastic, clayey, tan to brown	0.01
130	C			SANDY SILT: Fine to very fine, very hard, dark brown	0.0
135	C			SAND: Fine to very fine, silty, tan, small amount of water	0.0
140	C			CLAY: Sandy, gravelly, plastic, dark brown	0.02
145	C			CLAY: Silty, brown, hard	0.01
150	C			CLAY: Silty, sandy, brown	0.0
155	C			SILT: Gravelly, water	0.0
160	C				Water sample at 160' pH = 6.2 Temperature = 19°C Conductivity = 260

Location _____
Grid Cell _____
Coordinates x _____
 y _____

Project: MOBILE 11 in 1980-1981 Phase II
Beginning 8-24-84 and end 8-24-84 of drilling operation
Sampling Interval (Estimated) 1000 (ft)
Type Drill Rig and Operator Wiley Pneumatic GP1000
Log Recorded By W. J. Foster

Ground Level Elevation: 50 ft.MSL (approx).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
160	C			CLAY: Silty, sandy, hard, brown	0.01
165	C			SAND: Medium to coarse, clean, brown	0.02
170	C			GRAVEL: Sandy	0.02
175					0.01
180	C			SAND: Gravelly, medium to coarse, sandy	Water sample at 180' pH = 6.0 Temperature = 16°C Conductivity = 220
185	C			SAND and GRAVEL: Medium to coarse, water	0.01
190	C			SAND: Clayey, fine to very fine, tan	0.02
195	C			SAND: Clayey, fine to very fine	0.04
200	C			SAND: Slightly clayey, very fine, micaceous Total Depth: 200 Feet	0-200' 4 1/2" hole Grouted hole through and capped w/ 31 sacks Portland Cement Type I & II 0.02

Log of Drilling Operations

 Boring or Well No. RB-24
 Sheet 1 of 5

 Location _____
 Grid Cell 8, 14
 Coordinates x 7425
 y 13,550

 Project McClellan AFB IRP Phase II
 Beginning 2 August 1984 and end
2 August 1984 of drilling operation
 Sampling Interval (Estimated) Composite 5 (ft)
 Type Drill Rig and Operator Drillsystem 1000 CSR/
 Log Recorded By T. Walters L. Holtorf

 Ground Level Elevation: 51 ft. MSL (toro).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
0					Drilled by the dual tube air rotary method.
	C			TOPSOIL; unconsolidated silt, sand and gravel.	0.0
5					
	C			SILT; unconsolidated, sandy from 8-10'.	0.0
10					
	C			CLAY; silty, good plasticity, red, slightly moist.	0.0
15					
	C			SILT; well sorted, brown.	0.0
20					
	C			SILT; fine, yellow, becoming coarser with depth.	0.0
25					
	C			SILT; sandy, fine-med. grained, yellow- brown, micaceous, black 1' thick frag. 10%.	0.0
30					
	C			SILT; fine-grained, well sorted, red, slightly damp.	0.0
35					
	C			SILT; well sorted, red-brown, slightly damp.	0.0
40					

Log of Drilling Operations

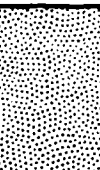

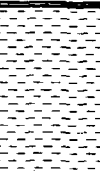
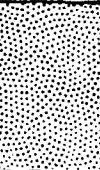
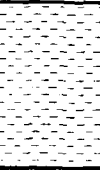
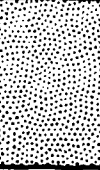


 Boring or Well No. RB-24
 Sheet 2 of 5

 Location _____
 Grid Cell 8, 14
 Coordinates x 7425
 y 13,550

 Project McClellan AFB IEP Phase II
 Beginning 2 August 1984 and end
2 August 1984 of drilling operation

 Ground Level Elevation: 51 ft. MSL (topo).

 Sampling Interval (Estimated) Composite 5 (ft)
 Type Drill Rig and Operator Drillsystem 1000 CSR/
 Log Recorded By T. Walters V. Holtorf

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
40					
	C			SAND; silty, fine-medium grained, well rounded, light brown.	0.0
45					
	C			CLAY and SILT; interbedded, clay, red brown, oxidized, silt, fine-grained, damp.	0.0
50					
	C			SILT; clayey, dark brown, clay, good plasticity, tan-gray.	0.0
55					
	C			SAND; silty, fine-grained, w/yellow silt, interbedded.	0.0
60					
	C			SILT; well sorted, yellow, powder coarsening downward.	0.0
65					
	C			SAND; silty, fine-medium-grained, mod. sorted, subrounded.	0.0
70					
	C			CLAY; silty, good plasticity, moist, confining, tan-brown, increase in clay 15%.	0.0
75					
	C			SILT; clayey, tan, slightly moist.	Dropped probe; no water in borehole.
80					0.0

Log of Drilling Operations

 Boring or Well No. RB-24
 Sheet 3 of 5

 Location _____
 Grid Cell 8, 14
 Coordinates x 7425
 y 13.550

 Project McClellan AFB IEP Phase II
 Beginning 2 August 1984 and end
2 August 1984 of drilling operation
 Sampling Interval (Estimated) Composite 5 (ft)
 Type Drill Rig and Operator Drillsystem 1000 CSR
 Log Recorded By T. Walters L. Holtorf

 Ground Level Elevation: 51 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
80				SAND; fine-grained, well sorted, quartz subangular.	0.0
85	C				0.0
90	C			SAND; coarse-grained, micaceous, water-bearing.	Water sample Water 87' pH 6.5 Temp. 23°C Cond. 210
95	C			SAND and CLAY; interbedded, increasing in clay brown, confining.	0.0
100	C			CLAY; gray, good plasticity, sand; fine-coarse poorly sorted, oxidized.	0.0 + 5 gpm.
105	C			CLAY; silty tan brown, fair plasticity.	0.0
110	C			SAND and CLAY; hard, cemented, "pop-corn" waterbearing.	Water sample pH 7.1 Temp. 18°C Cond. 210
115	C			CLAY; very good plasticity, gray.	0.0
120	C			SAND; hard, cemented, dark brown, pop-corn texture, possible regolith.	0.0

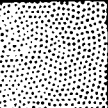
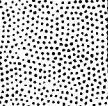
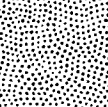



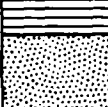
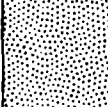
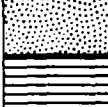
Log of Drilling Operations

 Boring or Well No. RB-24
 Sheet 4 of 5

 Location _____
 Grid Cell 8, 14
 Coordinates x 7425
 y 13,550

 Project McClellan AFB IRP Phase II
 Beginning 2 August 1984 and end
2 August 1984 of drilling operation
 Sampling Interval (Estimated) Composite 5 (ft)
 Type Drill Rig and Operator Drillsystem 1000 CSR
 Log Recorded By T. Walters L. Holtorf

 Ground Level Elevation: 51 ft. MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
120	C			SAND; fine-grained, with clay matrix, water-bearing, brown.	0.0
125	C			Same as above.	0.0 Water sample pH 7.5 Temp. 19°C Cond. 250
130	C			CLAY; good plasticity, yellow-gray, confining.	0.0
135	C			Same as above.	0.0
140	C			SAND; clayey, interbedded, yellow-gray, beds 1' thick.	0.0
145	C			CLAY; gray, extremely plastic.	0.0
150	C			SAND and GRAVEL; fine-coarse, poorly sorted, high energy, sharp contact with above unit.	0.0
155	C				0.0
160	C			GRAVEL; sandy, channel-high energy, poorly sorted, quartz angular, clear-yellow.	Rig shimmy 157-160' greatest amount of gravel in borehole.

Log of Drilling Operations

 Boring or Well No. RB-24
 Sheet 5 of 5

 Location _____
 Grid Cell 8, 14
 Coordinates x 7425
 y 13,550

 Project McClellan AFB IRP Phase II
 Beginning 2 August 1984 and end
2 August 1984 of drilling operation
 Sampling Interval (Estimated) Composite 5 (ft)
 Type Drill Rig and Operator Drillsystem 1000 CSR/
 Log Recorded By T. Walters L. Holtort

 Ground Level Elevation: 51 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
160				SAND; hard, cemented, oxidized, w/ gypsum 20% popcorn texture.	0.0
165	C				
170				SAND; hard, cemented with clay, red. Increase in gypsum, 30%.	0.0
175	C				
180				SAND; coarse, poorly sorted, clay clasts 15%, black lithoc frag. 10%.	0.0
185	C				0.0
190				SAND, fine-med. grained, mica cears, v. well sorted, well rounded, water red, oxidized, black lithic frag. 10%.	+ 100 gpm. 0.0
195	C			SAND and GRAVEL; same as above, coarsening downward.	0.0
200				SAND and GRAVEL; high energy, poorly sorted, lithic 20%, quartz is subangular, clear-yellow, oxidized. CLAY; gray, fair plasticity, semi-confining.	0.0
	C				Grout hole through dual tubes w/Ready Mix Portland Cement Type I & II.
				Total Depth: 195 Feet	

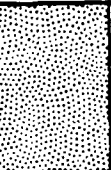
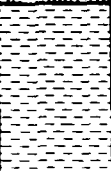

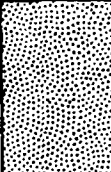
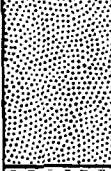
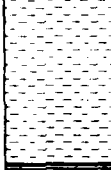


Log of Drilling Operations

 Boring or Well No. RB-25
 Sheet 1 of 5

 Location Far Northeast Corner of Flightline
 Grid Cell 15:25
 Coordinates x 14,050'
 y 24,160'

 Project McClellan AFB IRP Phase II
 Beginning 31 August 1984 and end
1 September 1984 of drilling operation
 Sampling Interval (Estimated) Composite 5 (ft)
 Type Drill Rig and Operator Drill Tek D40K/S. Smith
 Log Recorded By R.A. Belan

 Ground Level Elevation: apx. 72 ft. MSL (toro).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
0	G			SAND and CLAY; hard, dry, Md-FN, brown to reddish-brown.	Drilled by the dual tube air rotary method. OVM (ppm)
5	C			SILT and CLAY, minor sand, brown, dry, unconsolidated.	35.0
10	C			CLAY; brown, unconsolidated, dry.	Driller cut w/water.
15	C			SAND; FN-VF, tan, unconsolidated.	52.0
20	C			SAND and SILT; FN-VF, tan, unconsolidated, dry.	18.5
25	C			SILT; tan, unconsolidated, dry.	49.0
30	C			CLAY, brown, unconsolidated, drv.	6.0
35	C			CLAY, brown, unconsolidated, drv.	Driller cut w/water. 7.0
40					

Log of Drilling Operations

 Boring or Well No. RB-25
 Sheet 2 of 5

 Location Far Northeast Corner of Flightline
 Grid Cell 15:25
 Coordinates x 14,050'
 y 24,160'

 Project McClellan AFB IRP Phase II
 Beginning 31 August 1984 and end
1 September 1984 of drilling operation
 Sampling Interval (Estimated) Composite 5 (ft)
 Type Drill Rig and Operator Drill Tek D40K/S. Smith
 Log Recorded By R.A. Belan

 Ground Level Elevation: apx. 72 ft. MSL (tomo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
40					
45	C			SILT, yellowish, brown, unconsolidated, dry.	9.6
50	C			SILT and CLAY, brown, unconsolidated, slight moisture.	22.5
55	C			SILT and CLAY; same.	
60	C			CLAY, brown, dry, unconsolidated.	Driller cut w/water.
65	C			SAND and CLAY, FN-VF, tan, unconsolidated, dry.	4.0
70	C			CLAY, light tan, unconsolidated, slight moisture.	1.5
75	C			SAND and SILT, minor clay, FN-VF, tan, unconsolidate.	0.2
80	C			CLAY, brown, unconsolidated.	Driller cut w/water. 43.0 All dry so far.

Log of Drilling Operations

 Boring or Well No. RB-25
 Sheet 3 of 3

 Location Far Northeast Corner of Flightline
 Grid Cell 15:25
 Coordinates x 14,050'
 y 24,160'

 Project McClellan AFB IDP Phase II
 Beginning 31 August 1984 and end
1 September 1984 of drilling operation
 Sampling Interval (Estimated) Composite 3 (ft)
 Type Drill Rig and Operator Drill Tek D40K S. Smith
 Log Recorded By R.A. Belan

 Ground Level Elevation: apx. 72 ft. MSL (toro).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
80					
	C			SILT and CLAY; unconsolidated, brown (clay), off-white (silt), dry to slight moisture.	19.3
85					
	C			CLAY; minor silt, brown, unconsolidated, dry.	Driller cut w/water. 38.9
90					
	C			CLAY; brown, unconsolidated, dry.	3.5
95					
	C			CLAY; brown, minor silt, unconsolidated, dry.	1.2
100					
	C			CLAY, SILT and SAND, minor gravel, brown, unconsolidated Md-FN.	Driller cut w/water. 3.2
105					
	C			CLAY and SAND; brown, Md-FN, unconsolidated, dry.	
110					
	C			CLAY, SAND and GRAVEL; Md-FN, unconsolidated, dry, brown, subangle to angular.	0.7
115					
	C			CLAY, SAND, GRAVEL; same.	Trace water (?) from 115-120'. 2.1
120					Driller cut w/water.

Log of Drilling Operations

 Boring or Well No. RB-25
 Sheet 4 of 5

 Location Far Northeast Corner of Flightline

 Grid Cell 15:25

 Coordinates x 14,050'

 y 24,160'

 Project McClellan AFB IRP Phase II

 Beginning 31 August 1984 and end

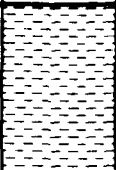

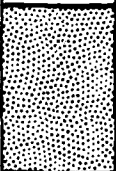



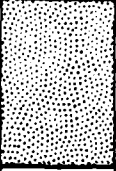

1 September 1984 of drilling operation

 Sampling Interval (Estimated) Composite 5 (ft)

 Type Drill Rig and Operator Drill Tek D40K/S. Smith

 Log Recorded By R.A. Belan

 Ground Level Elevation: apx. 72 ft. MSL (toro).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
120	C	RB-25-1		SILT and CLAY; brown, unconsolidated, slight moisture.	0.5
125	C			CLAY and SAND; VF, tan (sand), brown (clay), unconsolidated, dry.	
130	C			SAND, SILT and CLAY; Fn-VF, tan (sand), brown (clay), unconsolidated, dry.	4.4
135	C			CLAY; brown, unconsolidated, slight moisture.	0 (background) WL: 103' BGL; T: 19°C; C: 210; pH: 7.8.
140	C			CLAY, brown, slight moisture, unconsolidated.	Water (?) from 135-145'. 5.9
145	C			CLAY; brown, unconsolidated.	
150	C			SAND and CLAY; F, tan (sand), unconsolidated, brown (clay).	No obvious water. 2.3
155	C			CLAY and SAND; Cs-VF, minor silt (white), tan (sand) dry, unconsolidated.	Dry at 160'. (Driller blew out hole - no water.) 4.0
160					

Log of Drilling Operations

 Boring or Well No. RB-25
 Sheet 5 of 5

 Location Far Northeast Corner of Flightline

 Grid Cell 15:25

 Coordinates x 14,050'
 y 24,160'

 Project McClellan AFB IPP Phase II

 Beginning 31 August 1984 and end
1 September 1984 of drilling operation

 Sampling Interval (Estimated) Composite 5 (ft)

 Ground Level Elevation: apx. 72 ft. MSL (toro).

 Type Drill Rig and Operator Drill Tek D40K/S. Smith
 Log Recorded By R.A. Belan

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
160		RB-25-2			WL: 107' BGL. T: 21 1/2°C; C:750; pH: 8.2.
	C			SAND and CLAY; Md-VF, mottled tan-brown, micaceous (gold).	
165					
	C			CLAY and SAND, same, dry.	Driller cut w/water.
170					
	C			CLAY and SAND, same.	Driller cut w/water. 85
175					
	C			CLAY; brown, unconsolidated.	Driller cut w/water
180					Fluid level: none detected at 180' with E-line. Water at approx. 187'.
	C			CLAY; brown, dry, unconsolidated.	
185					
	C	RB-25-3		SAND, Md-VF, minor clay, mottled tan, micaceous (gold), makes steady water. (187-190' sand).	Fluid level: 118' BGL; T: 21°C; C:330; pH: 8.3.
190					
	C			CLAY, brown, unconsolidated, dry.	Water from 187-195'.
195				Total depth: 195 ft.	
200					Grouted hole through dual tubes w. 43 sacks Portland Cement Type I & II

Log of Drilling Operations

 Boring or Well No. RB-26
 Sheet 1 of 5

 Location South of Bldg. 1440

 Grid Cell 17:20

 Coordinates x 16,990'

 y 19,480'

 Project McClellan AFB IEP Phase II

 Beginning 30 August 1984 and end

31 August 1984 of drilling operation

 Sampling Interval (Estimated) Composite 5 (ft)

 Ground Level Elevation: apx. 87 ft. MSL (topo).

 Type Drill Rig and Operator Drill Tek D40K/S. Smith

 Log Recorded By R.A. Belan

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
0					Drilled by the dual tube air rotary method.
5	G			SOIL; silt, clay, dry, unconsolidated, tan.	OVM (ppm) 0.1 (background)
10	C			CLAY; dry, brown (driller cut w/water).	
15	C			SAND; Fn-VF, unconsolidated, dry, brown.	5.0
20	C			SAND and SILT; Fn-VF, unconsolidated, dry, brown.	0.5
25	C			CLAY, slightly moist, unconsolidated, brown.	48.0
30	C			SILT and SAND; Fn-VF, unconsolidated, dry, tan.	12.5
35	C			SILT and SAND, VF, unconsolidated, slight moisture, tan.	3.2
40	C			SILT and CLAY; slight moisture, red- dish brown, unconsolidated.	1.5

Log of Drilling Operations

 Boring or Well No. RB-26
 Sheet 2 of 3

 Location South of Bldg. 1440
 Grid Cell 17:20
 Coordinates x 16,990'
 y 19,480'

 Project McClellan AFB IPP Phase II
 Beginning 30 August 1984 and end
31 August 1984 of drilling operation
 Sampling Interval (Estimated) Composite 5 (ft)
 Type Drill Rig and Operator Drill Tek D40K S. Smith
 Log Recorded By R.A. Belan

 Ground Level Elevation: apx. 87 ft. MSL (core).

Depth (ft)	Type of Sample Taken	ID No of Sample Taken	Graphic Log	Lithologic Description	Remarks
40					
	C			CLAY; hard, unconsolidated, brown.	Driller had to cut w/water. 0.6
45					
	C			CLAY, same.	1.5
50					
	C			CLAY, same.	3.5
55					
	C			CLAY and SAND, VF, unconsolidated, brown.	Driller had to cut w/water. 4.0
60					
	C			CLAY and SAND, same.	
65					
	C			CLAY and SAME, same.	1.0
70					
	C			CLAY and SAND, same.	1.0
75					
	C			CLAY, hard, dry, unconsolidated.	
80					

Log of Drilling Operations

 Boring or Well No. RB-26
 Sheet 1 of 1

 Location South of Bldg. 1440
 Grid Cell 17:20
 Coordinates x 16,990'
 y 19,480'

 Project McClellan AFB INF Phase II
 Beginning 30 August 1984 and end 31 August 1984 of drilling operation
 Sampling Interval (Estimated) Composite 5 (ft)
 Type Drill Rig and Operator Drill Tek D40K S. Smith
 Log Recorded By R.A. Belan

 Ground Level Elevation: apx. 87 ft. MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
50					
55	C			SAND and CLAY, tan, Fn-VF, unconsolidated, dry.	
60					
65	C			CLAY; brown, unconsolidated.	4.4 (Background): 4.4, it's been raining. 10.0
70					
75	C			CLAY and SAND; VF, unconsolidated, brown.	
80					
85	C			CLAY and SAND, same.	
90					
95	C			SAND and CLAY; brown, unconsolidated, Med-FN.	
100					
105	C			CLAY and SAND, Fn-VF, unconsolidated, clay-hard, brown.	
110					
115	C			CLAY, reddish brown, dry.	
120					
125	C	RB-26-1		CLAY and SAND; Fn-VF, unconsolidated, brown.	9.8 Water: T: °C; C: 170; pH: 7.3. Very little water produced.

Log of Drilling Operations

 Boring or Well No. RB-26
 Sheet 4 of 5

 Location South of Bldg. 1440

 Grid Cell 17:20

 Coordinates x 16,990'

 y 19,480'

 Project McClellan AFB IRP Phase II

 Beginning 30 August 1984 and end

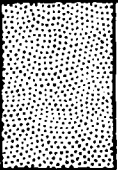
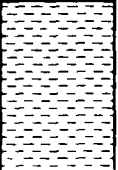
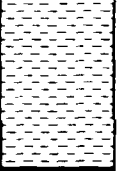





31 August 1984 of drilling operation

 Sampling Interval (Estimated) Composite 5 (ft)

 Type Drill Rig and Operator Drill Tek D400, S. Smith

 Log Recorded By R.A. Belar

 Ground Level Elevation: apx. 87 ft. MSL (topo).

Depth (ft)	Type of Sample Taken	ID No of Sample Taken	Graphic Log	Lithologic Description	Remarks
120	C	RB-26-2		SAND; C-F, unconsolidated, mottled, tan.	9.9
125	C			SILT and SAND, VF, unconsolidated, dry.	7.7
130	C			SILT and CLAY; unconsolidated, slight moisture, brown.	12.6 7.9 (background)
135	C			CLAY and SILT, unconsolidated, brown, some moisture.	Water level: 117', T: 23°C; C: 150; pH: 7.4. Little water produced.
140	C			CLAY and SILT; same.	
145	C			CLAY, : slight moisture, brown.	8.2
150	C			CLAY; dry (?), brown.	8.0
155	C			CLAY and SILT; hard, dry, brown.	No apparent water.

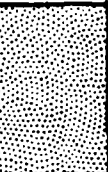

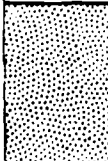
Log of Drilling Operations

 Boring or Well No. RB-26
 Sheet 5 of 5

 Location South of Bldg. 1440
 Grid Cell 17:20
 Coordinates x 16,990'
 y 19,480'

 Project McClellan AFB IEP Phase II
 Beginning 30 August 1984 and end
31 August 1984 of drilling operation
 Sampling Interval (Estimated) Composite 5 (ft)
 Type Drill Rig and Operator Drill Tek D40K/S. Smith
 Log Recorded By R.A. Belan

 Ground Level Elevation: apx. 87 ft. MSL (toro).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
160	C			SAND, CLAY and GRAVEL; Md-FN, unconsolidated; no water, brown. Silt (white).	5.0 1.2 (background)
165				CLAY and SILT; minor sand, Fn, Brown, unconsolidated, dry.	2.5
170	C			CLAY; minor sand, Fn-VF, brown, unconsolidated, dry.	
175	C			CLAY, same.	
180	C			CLAY; same. Possible trace water.	Driller had to use water to cut)
185	C			CLAY; same.	4.0
190	C			CLAY; same.	
195	C			CLAY; same.	
195		RB-26-3		SAND and CLAY; Vf-Fn, brown, water, unconsolidated, micaceous (golden).	Water level: 122', BGL (rose quickly). T: 21°C; C: 200; pH: 7.5.
200	C			Total Depth: 200 Feet	Grouted hole through dual tubes w apx. 36 sacks Portland Cement Type I & II

Log of Drilling Operations

 Boring or Well No. RB 27
 Sheet 1 of 5

 Location _____
 Grid Cell 14, 7
 Coordinates x 13200
 y 6000

 Project McClellan AFB IPP Phase II
 Beginning 9-5-84 and end 9-6-84 of drilling operation
 Sampling Interval (Estimated) Composite 5 (ft)
 Type Drill Rig and Operator Chicago Pneumatic CP200
 Log Recorded By W. Boettner B. Horst

 Ground Level Elevation: 55 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
0					ovm(ppm)
	C			Highway base material	0.0
5					
	C			CLAY: Sandy, reddish brown	0.10
10					
	C			CLAY: Silty, sandy, reddish brown	0.12
15					
	C			CLAY: Silty, sandy, reddish brown	0.08
20					
	C			SAND: Silty, clayey, very fine grained, tan	0.04
25					
	C			SAND: Clayey, medium to very fine grained, reddish brown	0.02
30					
	C			SAND: Clayey, medium to very fine grained, brown	0.01
35					
	C			SAND: Clayey, silty, medium to fine grained, brown	0.02

Log of Drilling Operations

 Boring or Well No. 27
 Sheet 2 of 5

 Location _____
 Grid Cell 14,7
 Coordinates x 13200
 y 6000

 Project McClellan AFB IRP Phase II
 Beginning 9-5-84 and end 9-6-84 of drilling operation
 Sampling Interval (Estimated) Composite 5 (ft)
 Type Drill Rig and Operator Chicago Pneumatic CP2000
 Log Recorded By W. Boettner W. Horst

 Ground Level Elevation: 55 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
40					
45	C			SAND: Silty, clayey, very fine to medium grained, brown	0.0
50	C			SAND: Gravelly, micaceous, coarse to very fine grained, brown	0.0
55	C			SAND: Micaceous, coarse to very fine grained, brown	0.01
60	C			CLAY: Sandy, micaceous	0.04
65	C			SAND: Silty, fine to very fine grained, brown	0.0
70	C			SAND: Silty, fine to very fine grained, brown	0.0
75	C			SAND: Micaceous, fine to very fine grained, brown	0.04
80	C			SAND: Silty, clayey, fine to very fine grained, brown to tan	0.02

Log of Drilling Operations

 Boring or Well No. RB 27
 Sheet 3 of 5

 Location _____
 Grid Cell 14,7
 Coordinates x 13200
 y 6000

 Project McClellan AFB IRP Phase II
 Beginning 9-5-84 and end 9-6-84 of drilling operation
 Sampling Interval (Estimated) Composite 5 (ft)

 Ground Level Elevation: 55 ft.MSL (topo).

 Type Drill Rig and Operator Chicago Pneumatic CP200
 Log Recorded By W. Boettner B. Horst

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
80					
	C			SAND: Clayey, gravelly, very fine grained, tan	0.0
85					
	C			SAND: Silty, fine to coarse grained, tan to brown	0.01
90					
	C			SAND: Clayey, very fine to coarse grained, micaceous, tan to gray	0.0
95					
	C			SAND: Clayey, medium to very fine grained, micaceous, brown to gray	0.04
100					
	C			CLAY: Silty, sandy, brown (moist)	0.02
105					
	C			CLAY: Sandy, plastic, brown (moist)	0.0
110					
	C			CLAY: Sandy, gravelly, dark brown	0.02
115					
	C			CLAY: Sandy, plastic, dark brown	0.0
120					

Log of Drilling Operations

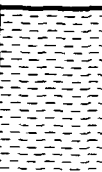
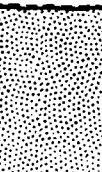
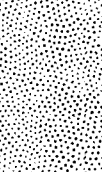
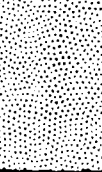
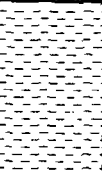
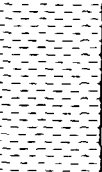


 Boring or Well No. RB 27
 Sheet 4 of 5

 Location _____
 Grid Cell 14, 7
 Coordinates x 13200
 y 6000

 Project McClellan AFB IFF Phase II
 Beginning 9-5-84 and end 9-6-84 of drilling operation
 Sampling Interval (Estimated) Composite 5 (ft)

 Ground Level Elevation: 55 ft.MSL (toro).

 Type Drill Rig and Operator Chicago Pneumatic CP300
 Log Recorded By W. Boettner B. Horst

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
120	C			SILT: Sandy, clayey, tan	0.0
125	C			SAND: Silty, clayey, fine to very fine grained	0.02
130	C			SAND: Silty, clayey (moist)	0.0
135	C			SAND: Silty (moist)	0.0
140	C			SILT: Clayey, sandy, brown	0.0
145	C			SILT: Sandy, clayey, plastic, brown	0.01
150	C			SILT: Sandy, clayey, fine to medium grained, brown	0.02
155	C			SILT: Sandy, clayey, brown	0.0
160	C				Water sample at 160' pH = 5.2 Conductivity = 280 Temperature = 16°C

Log of Drilling Operations

 Boring or Well No. RB 27
 Sheet 7 of 8

 Location _____
 Grid Cell 14. 7
 Coordinates x 13200
 y 6000

 Project McClellan AFB IRR Phase II
 Beginning 9-5-84 and end 9-6-84 of drilling operation
 Sampling Interval (Estimated) Composite (ft)

 Ground Level Elevation: 55 ft. MSL (topo). Type Drill Rig and Operator Chicago Pneumatic CP2000
 Log Recorded By: B. Bortner B. Horst

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
160					
	C			SAND: Silty, clayey, fine to medium grained, brown	0.02
165					
	C			SAND: Silty, clayey, fine to medium grained, brown	0.0
170					
	C			SAND: Silty, clayey, fine to medium grained, brown	0.0
175					
	C			SAND: Clayey, silty, fine to medium grained, brown	0.0
180					
	C			SAND: Silty, clayey, fine to medium grained	0.0
185					
	C			SAND: Silty, clayey, fine to medium grained	0.01
190					
	C			SAND: Clean, micaceous, fine to medium grained	0.01
195				Total Depth: 195 feet	Water sample at 190' pH = 6.8 Conductivity = 240 Temperature = 15°C 0-195' 4½" hole Grouted hole through dual tubes w/ 37 sacks Portland Cement Type I & II
200					

Log of Drilling Operations

 Boring or Well No. RB-28
 Sheet 1 of 3

 Location Westside of SAC Horseman Association Project McClellan AFB IIR Phase II
 Grid Cell 16:08 Beginning 4 September 1984 and end
 Coordinates x 15,720' 5 September 1984 of drilling operation
 y 7,040' Sampling Interval (Estimated) Composite 5 (ft)
 Ground Level Elevation: apx. 62 ft. MSL (tomo). Type Drill Rig and Operator Drill Tek D40K S. Smith
 Log Recorded By R.A. Belan

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
0	G			SILT and SAND; brown, unconsolidated, dry.	Drilled by the dual tube air rotary method. OVM (ppm) 0 (background)
5	C			SILT and SAND; Cs-VF, minor gravel, tan, ang-subang, unconsolidated, dry.	
10	C			CLAY and SAND; Fn(?), dry, unconsolidated, brown.	Driller cut w/water. 0.5
15	C			SAND; Md-Fn, ang-subang, tan, unconsolidated, dry.	1.5
20	C			SAND; tan, dry, unconsolidated.	6.6
25	C			CLAY and SILT; brown, dry, unconsolidated.	25.0
30	C			CLAY; brown, dry, unconsolidated.	Driller cut w/water. 13.0
35	C			CLAY; brown, dry, unconsolidated.	
40	C			CLAY; brown, dry, unconsolidated.	

Log of Drilling Operations

 Boring or Well No. RB-28

 Sheet 2 of 5

 Location Westside of SAC Horseman Association

 Project McClellan AFB IPP Phase II

 Grid Cell 16:08

 Beginning 4 September 1984 and end

 Coordinates x 15,720
5 September 1984 of drilling operation

 y 7,040

 Sampling Interval (Estimated) Composite 5 (ft)

 Ground Level Elevation: apx. 62 ft. MSL (tore)

 Type Drill Rig and Operator Drill Tek D40K/S. Smith

 Log Recorded By R.A. Belan

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
40					
	C			SAND; Cs-Fn, mottled, brown, ang-subang, dry, unconsolidated.	0.4
45					
	C			CLAY and SILT; brown (clay), tan (silt), dry, unconsolidated.	0.7
50					
	C			CLAY; hard, dry, grayish brown, unconsolidated.	Driller cut w/water. 0.7
55					
	C			CLAY; hard, dry, grayish brown, unconsolidated.	Driller cut w/water. 100
60					
	C			CLAY and SAND; Fn, grayish tan, plastic, dry, unconsolidated.	83
65					
	C			CLAY, grayish tan, slight moisture, plastic, unconsolidated.	11.0
70					
	C			CLAY; minor sand, brown, dry, unconsolidated.	54
75					
	C			CLAY; hard, dry, brown, unconsolidated.	8.8
80					

Log of Drilling Operations

 Boring or Well No RB-28

 Sheet 1 of 3

 Location Westside of SAC Horseman Association

 Grid Cell 16:08

 Coordinates x 15,720'

 y 7,040'

 Project McClellan AFB IPP Phase II

 Beginning 4 September 1984 and end

5 September 1984 of drilling operation

 Sampling Interval (Estimated) Composite 5 (ft)

 Type Drill Rig and Operator Drill Tek D40K S. Smith

 Log Recorded By R.A. Belan

 Ground Level Elevation: apx. 62 ft. NSL (tore).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
80					
	C			CLAY; plastic, slight moisture, brown, unconsolidated.	130
85					
	C			CLAY; plastic, slight moisture, brown, unconsolidated.	60.3
90					
	C			CLAY; same.	12.2
95					
	C			CLAY; same, very small amount of water (not enough to sample).	
100					
	C			SAND and CLAY; Fn-Vf, plastic, unconsolidated.	Driller cut w/water. 8.7
105					
	C			SAND and CLAY; same.	
110					
	C			CLAY; dry, unconsolidated, mottled, reddish-brown (iron oxide color).	
115					
	C			SAND and CLAY; same, some iron oxide cementing of sand grains (slightly unconsolidated, C-F (sand)).	W.L.: 102 1/2' BGL. T: 22°C; C: 250; pH: 7.0. Water murky.
120		RB-28-1			

Log of Drilling Operations

 Boring or Well No RB-28
 Sheet 1 of 1

 Location Westside of SAC Horseman Association

 Project McClellan AFB IEP Phase II

 Grid Cell 16-08

 Beginning 4 September 1984 and end

 Coordinates x 15,720'
5 September 1984 of drilling operation



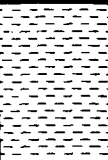





 y 7,040'

 Sampling Interval (Estimated) Composite 5' (ft)

 Ground Level Elevation: apx. 62 ft. MSL (topo).

 Type Drill Rig and Operator Drill Tek D40R S. Smith

 Log Recorded By R.A. Belan

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
120	C			SAND; F _n -VF, tan, unconsolidated, wet.	Sieve analysis indicates mostly silts.
125	C			CLAY and SILT; brown (clay), tan (silt), dry (silt), moist (clay), unconsolidated.	
130	C			SILT and CLAY; brown, unconsolidated, slightly moist (no free water).	130
135	C			CLAY; brown, unconsolidated, plastic, no free water.	1.0
140	C			CLAY; brown, unconsolidated, plastic (no free water).	0.3
145	C			CLAY; brown, slightly moist, minor sand (VF), unconsolidated.	
150	C			CLAY and SILT; brown and tan, unconsolidated, dry (?).	0.4
155	C			CLAY and SAND; brown, F _n -VF, unconsolidated, no obvious water.	WI: 105' BGL; 1: 24°C; C: 200; pH: 7.2.
160		RB-28-2			

200 10/1/84

Log of Drilling Operations

 Boring or Well No. RB-28
 Sheet 5 of 5

 Location Westside of SAC Horseman Association

 Project McClellan AFB IRP Phase II

 Grid Cell 16:08

 Beginning 4 September 1984 and end

 Coordinates x 15,720'
5 September 1984 of drilling operation

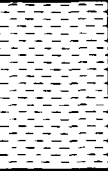

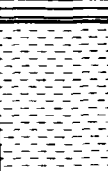

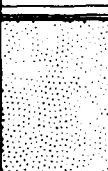



 y 7,040'

 Sampling Interval (Estimated) Composite 5 (ft)

 Ground Level Elevation: apx. 62 ft. MSL (tore).

 Type Drill Rig and Operator Drill Tek D40K/S. Smith

 Log Recorded By R.A. Belan

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
160	C			SILT and SAND; dry, tan, minor clay, unconsolidated.	0.2
165	C			CLAY; brown, plastic, unconsolidated, no free water.	0.5
170	C			SILT and CLAY; tan, dry, unconsolidated.	No OVM response.
175	C			CLAY; brown, some moisture, unconsolidated.	
180	C	RB-28-		SAND; minor gravel, minor clay, Md-Fn, mica (gold, unconsolidated), lots of water.	WL: 103' BGL; C: 220; pH: 7.0.
185	C			CLAY and SAND; brown, unconsolidated, dry (?).	
190	C			CLAY and SAND; brown, unconsolidated, dry (?).	
195	C			CLAY and SAND; brown, plastic, unconsolidated. No obvious water.	Grouted hole through dual tubes w 34 sacks Portland Cement Type 1 & 11
200				Total Depth: 200 Feet	

Log of Drilling Operations

 Boring or Well No. RB 29
 Sheet 1 of 5

 Location _____
 Grid Cell 11, 5
 Coordinates x 10550
 y 4850

 Project McClellan AFB IPP Phase II
 Beginning 9-4-84 and end 9-5-84 of drilling operation
 Sampling Interval (Estimated) Composite 5 (ft)
 Type Drill Rig and Operator Chicago Pneumatic CP-100
 Log Recorded By W. Boettner B. Horst

 Ground Level Elevation: 55 ft.MSL (tomo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
0					ovm(ppm)
	C			Highway base material	0.0
5					
	C			SAND: Silty, clayey, fine to very fine grained, brown	0.22
10					
	C			SAND: Silty, fine to very fine grained, brown	0.16
15					
	C			SAND: Silty, fine to very fine grained, brown	0.2
20					
	C			SAND: Silty, clayey, fine to very fine grained, tan to brown	0.14
25					
	C			SAND: Silty, fine to very fine grained, tan	0.08
30					
	C			SILT: Sandy, fine to very fine grained, tan	0.18
35					
	C			SAND: FeOH ₃ staining, trace of clay	0.04
40					

Log of Drilling Operations

 Boring or Well No. 29
 Sheet 2 of 5

 Location _____
 Grid Cell 11, 5
 Coordinates x 10550
 y 4850

 Project McClellan AFB IPP Phase II
 Beginning 9-4-84 and end 9-5-84 of drilling operation
 Sampling Interval (Estimated) Composite 5 (ft)
 Type Drill Rig and Operator Chicago Pneumatic CP2000
 Log Recorded By W. Boettner B. Gurst

 Ground Level Elevation: 55 ft.MSL (topo).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
40					
	C			SAND: Clayey, fine to medium grained, micaceous, brown	0.08
45					
	C			SAND: Clayey, fine to medium grained, micaceous, brown	0.06
50					
	C			SAND: Clayey, medium to very fine	0.12
55					
	C			CLAY: Sandy, silty, brown	0.10
60					
	C			CLAY: Sandy, silty, brown	0.02
65					
	C			SAND: Clayey, very fine grained, tan	0.04
70					
	C			SILT: Sandy, clayey, tan	0.08
75					
	C			SAND: Silty, clayey, plastic, dark brown	0.04
80					

Log of Drilling Operations

 Boring or Well No. 29
 Sheet 3 of 5

 Location _____
 Grid Cell 11, 5
 Coordinates x 10550
 y 4850

 Project McClellan AFB IMP Phase II
 Beginning 9-4-84 and end
9-5-84 of drilling operation
 Sampling Interval (Estimated) Composite (ft)

 Ground Level Elevation: 55 ft.MSL (topo).

 Type Drill Rig and Operator Chicago Pneumatic CP200
 Log Recorded By N. Boettner B. Horst

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
80					
	C			SAND: Clayey, fine to medium grained, dark reddish brown	0.06
85					
	C			SAND: Silty, clayey, medium to very fine grained, tan	0.02
90					
	C			SILT: Clayey, plastic, sandy (moist)	0.04
95					
	C			SAND: Clean, medium to coarse grained, tan	0.01
100					
	C			SILT: Sandy, clayey, plastic, tan to gray	0.0
105					
	C			CLAY: Sandy, fine to very fine grained, brown	0.01
110					
	C			SAND: fine to very fine grained, micaceous, tan	0.02
115					
	C			SAND: Silty, fine to very fine grained, brown to tan	0.04
120					

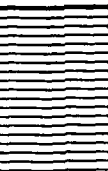

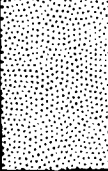
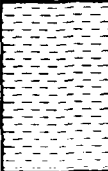
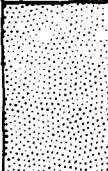
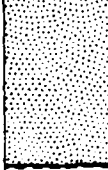
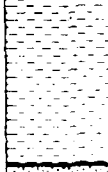
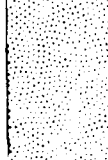
Log of Drilling Operations

 Boring or Well No. 29
 Sheet 1 of 5

 Location _____
 Grid Cell 11, 5
 Coordinates x 10550
 y 4850

 Project McClellan AFB IEP Phase II
 Beginning 9-4-84 and end 9-5-84 of drilling operation
 Sampling Interval (Estimated) Composite 5 (ft)
 Type Drill Rig and Operator Chicago Pneumatic CP200
 Log Recorded By W. Boettner B. Horst

 Ground Level Elevation: 55 ft.MSL (toro).

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
120	C			CLAY: Sandy, plastic, micaceous, brown	0.0
125	C			SAND: Silty, fine to medium grained, brown	0.01
130	C			SAND: Silty, clayey (plastic), fine to very fine grained, tan	0.04
135	C			SILT: Sandy, clayey, tan	0.08 Water sample at 140 pH = 6.0 Conductivity = 300 Temperature = 20°C
140	C			SAND: Silty, clayey, fine to medium grained	0.02
145	C			SAND: Gravelly, clayey (plastic), medium to coarse grained, dark brown	0.02
150	C			SILT: Sandy, clayey, reddish brown	0.04
155	C			SAND: Gravelly, fine to coarse grained, micaceous	0.0 Water sample at 160 pH = 6.2 Conductivity = 280 Temperature = 20°C
160	C				

Log of Drilling Operations

 Boring or Well No. 29
 Sheet 5 of 5

 Location _____
 Grid Cell 11, 5
 Coordinates x 10550
 y 4850

 Project McClellan AFB IIR Phase II
 Beginning 9-4-84 and end 9-5-84 of drilling operation

 Sampling Interval (Estimated) Composite (ft)

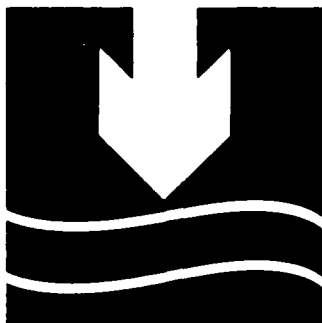
 Ground Level Elevation: 55 ft. MSL (tomo).

 Type Drill Rig and Operator Chicago Pneumatic CP2000
 Log Recorded By Robert AB 10/8/84

Depth (ft)	Type of Sample Taken	ID No. of Sample Taken	Graphic Log	Lithologic Description	Remarks
160	C			SAND: Silty	0.01
165	C			SAND: Silty, clayey	0.00
170	C			SAND: Clayey (plastic), fine to medium grained, brown	0.02
175	C			CLAY: Sandy, fine to medium grained, brown	0.00
180	C			SAND: Silty, fine to very fine grained, brown	0.02
185	C			SAND: silty, fine to very fine grained, brown	0.01
190	C			CLAY: Sandy, silty	0.04
195				Total Depth: 195 feet	0.02
					0-195' 4 1/2" hole drilled in the sand and times 26 sacks of Portland Cement Type I & II

APPENDIX 5-D

Results of Grain-Size Distribution
Analyses of Soil Samples



**ANDERSON
GEOTECHNICAL
CONSULTANTS, INC.**

File No. 1604-1
27 August 1984

E. Wayne Pearce
Radian Corp.
3401 La Grande Boulevard
Sacramento, CA 95823

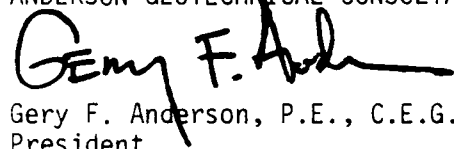
Subject: Grain Size Distribution Test Results

Gentlemen:

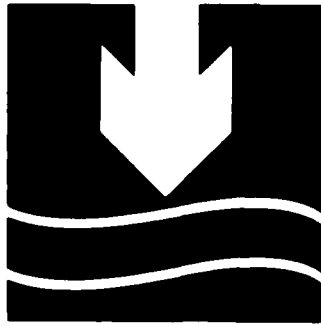
Enclosed are the results of the first set of samples (37 in all) submitted to our laboratory on 13 August 1984.

Very truly yours,

ANDERSON GEOTECHNICAL CONSULTANTS, INC.


Gery F. Anderson, P.E., C.E.G.
President

Enclosure: Test Results



**ANDERSON
GEOTECHNICAL
CONSULTANTS, INC.**

File No. 1604-1
31 August 1984

E. Wayne Pearce
Radian Corp.
3401 La Grande Boulevard
Sacramento, CA 95823

Subject: Grain Size Distribution Test Results

Gentlemen:

Enclosed are the results of the second set of samples (14 in all) submitted to our laboratory on 20 August 1984.

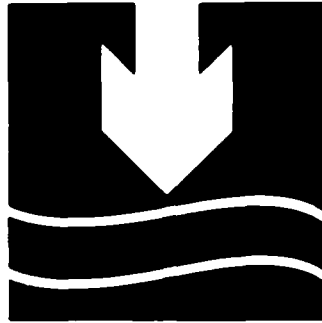
Very truly yours,

ANDERSON GEOTECHNICAL CONSULTANTS, INC.

Gery F. Anderson, P.E., C.E.G.
President

GFA/dmk

Enclosure: Test Results



**ANDERSON
GEOTECHNICAL
CONSULTANTS, INC.**

File No. 1604-1
10 September 1984

E. Wayne Pearce
Radian Corp.
3401 La Grande Boulevard
Sacramento, CA 95823

Subject: Grain Size Distribution Test Results

Gentlemen:

Enclosed are the results of the third set of samples (37 in all)
submitted to our laboratory on 27 August 1984.

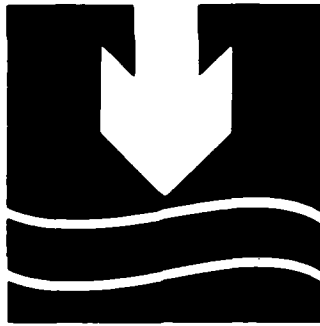
Very truly yours,

ANDERSON GEOTECHNICAL CONSULTANTS, INC.

Gery F. Anderson, P.E., C.E.G.
President

GFA/dmk

Enclosure: Test Results



**ANDERSON
GEOTECHNICAL
CONSULTANTS, INC.**

File No. 1604-1
24 September 1984

Radian Corporation
Attention: Rick Belan
8501 Mopac Boulevard
Austin, TX 78766

Subject: Grain Size Distribution Test Results

Gentlemen:

Enclosed are the results of the final set of samples (29 in all) submitted to our laboratory on 7 September 1984.

Very truly yours,

ANDERSON GEOTECHNICAL CONSULTANTS, INC.

Gerry F. Anderson, P.E., C.E.G.
President

GFA/mkb

Enclosure: Test Results

GRAIN SIZE CHART

FILE NO: _____

SAMPLE NO: KB 1-1

DATE: 127-135

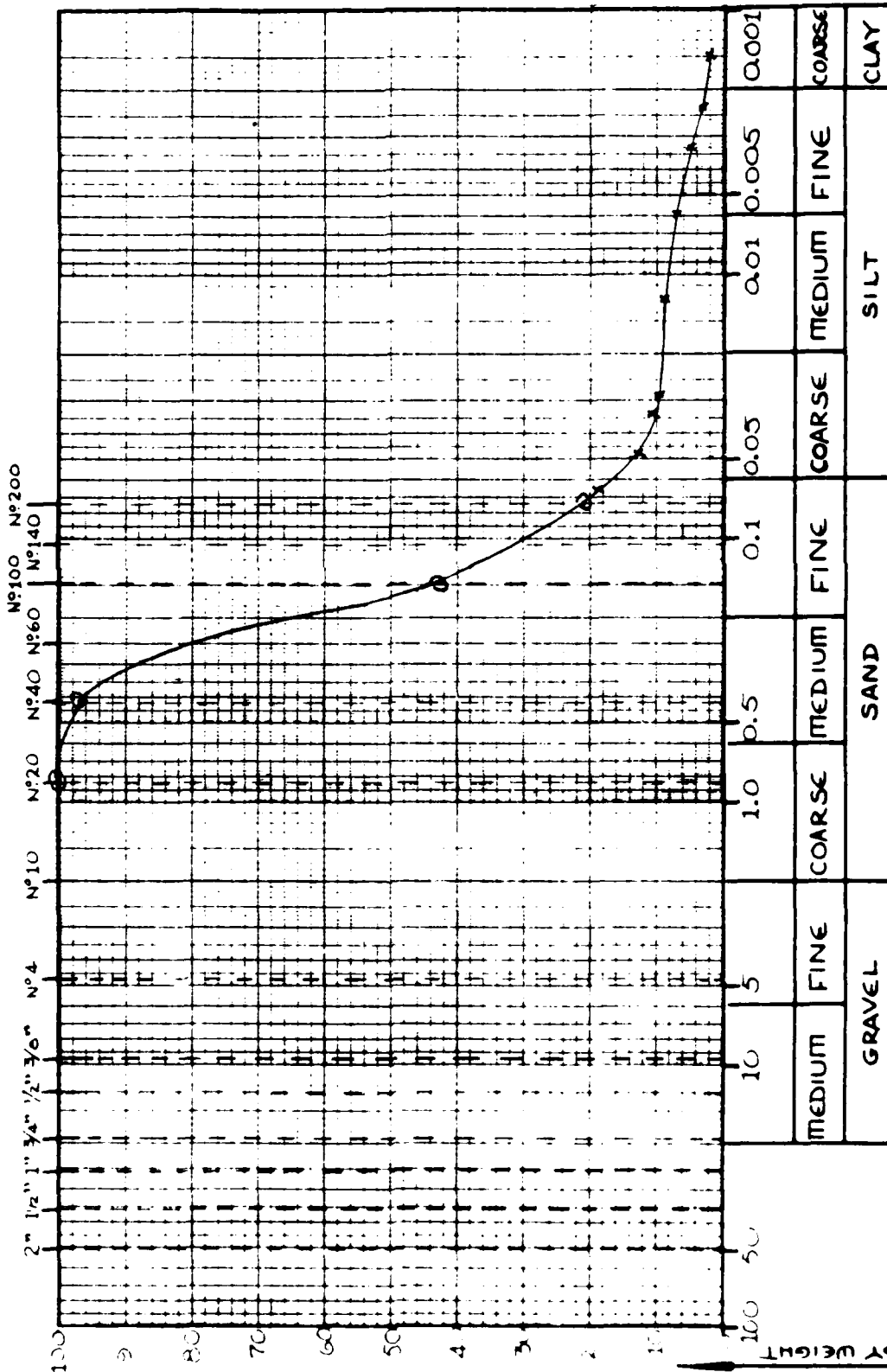
BY: _____

GP/CL	%
SAND	84 %
SILT	13 %
CLAY	3 %

DESCRIPTION: _____

COMMENTS _____

- SIEVE SIZES -



M.I.T. CLASSIFICATION
- GRAIN SIZE (mm) -

RB1-1

127-135

FILE NO: _____
 SAMPLE NO: _____
 DATE: _____
 BY: _____

HYDROMETER ANALYSIS

ASTM D 422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R _H	TEMP. °C	R _H = R _H + (CmCd)	DIA- METER (mm)	L	K	N (%)	N ₁ (%)
		1/2	9		9.4	0.067	14.7	0.0124	18.8	
		1	6		6.4	0.048	15.2	"	12.8	
		2	5		5.4	0.034	15.3	"	10.8	
		3	4.8	24	5.2	0.028	15.3	"	10.4	
		14	4.5	—	4.7	0.013	15.5	"	9.4	
		70	3.0	24	3.4	0.0059	15.6	"	6.8	
		230	2.5	26.5	2.3	0.0033	15.7	0.0127	4.6	
		470	2.5	25	1.6	0.0024	15.7	0.0124	3.2	
		1130	1.0	27	1.0	0.0015	16.0	0.0126	2.0	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s : ASSUMED = _____; CALCULATED = _____MENISCUS CORRECTION, C_m : _____DISPERSING AGENT CORRECTION, C_d : _____DRY WEIGHT OF SOIL, U_s : _____

% < N°60 SIEVE: _____

$$N_1 = \left(\frac{\% < N°60}{100} \right) N = \text{_____} N \text{ (COMBINED ANALYSIS).}$$

$$N = R \frac{G}{G-1} \times \frac{100}{U_s} = R \text{ _____}$$

REMARKS: _____

RB1-1

127-125

FILE NO: _____

SAMPLE NO: _____

DATE: _____

BY: _____

- SIEVE ANALYSIS -

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT	
			RETAINED	PASSING
3 IN.				
2 1/2 IN.				
2 IN.				
1 1/2 IN.				
1 IN.				
3/4 IN.				
1/2 IN.				
3/8 IN.				
NO. 4				
NO. 10				
NO. 20	— 0 —			100.00
NO. 40	1.6	2.2		97.8
NO. 60				
NO. 100	22.1	54.2		45.8
NO. 140				
NO. 200	10.6	21.2		78.8
PAN	13.7	21.2		
TOTAL	500	100		
REMARKS _____				

GRAIN SIZE CHART

FILE NO:

SAMPLE NO: BB-1-2

DATE: 160-165

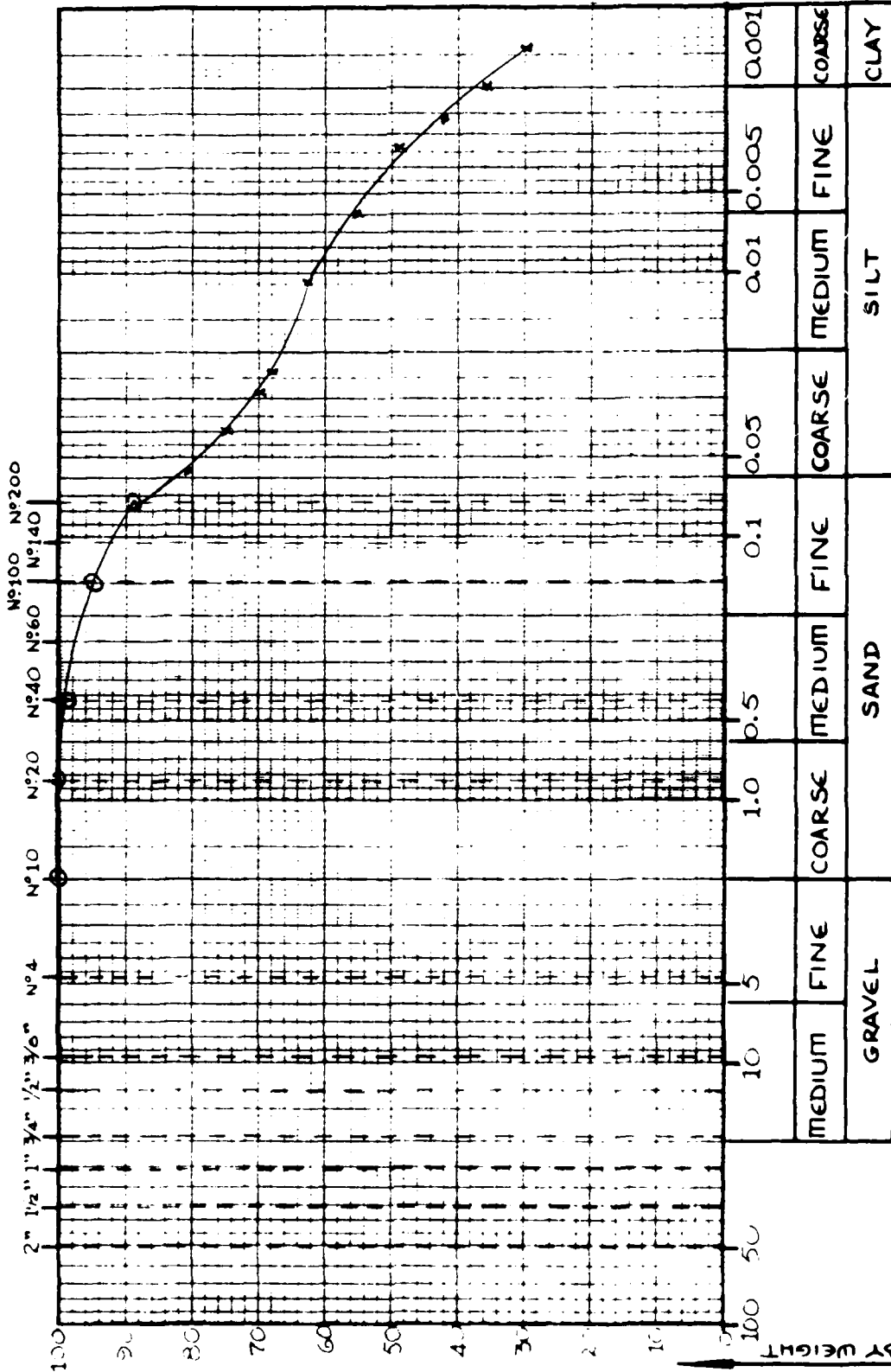
BY:

GRNCL	%
SAND	28%
SILT	45%
CLAY	37%

DESCRIPTION:

COMMENTS

- SIEVE SIZES -



M.I.T. CLASSIFICATION
- GRAIN SIZE (mm) -

RB 1-2

160-165

FILE NO: _____

SAMPLE NO: _____

DATE: _____

BY: _____

HYDROMETER ANALYSIS

ASTM. D 422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R _H	TEMP. °C	R _H = R _H + (CmCd)	DIA- METER (mm)	L	K	N (%)	N ₁ (%)
		1/2	40		40.4	0.054	9.6	.0124	80.8	
		1	37		37.4	0.040	10.1	"	74.8	
		2	34.5		34.9	0.028	10.4	"	69.8	
		3	33.5	28	33.9	0.024	10.6	"	67.8	
		14	31	—	31.4	0.011	11.1	"	62.8	
		50	27	—	27.4	0.0060	11.7	"	54.8	
		100	24	24	24.4	0.0043	12.2	"	48.8	
		260	21	26.5	20.8	0.0027	12.7	.0127	41.6	
		500	19	25	18.1	0.0020	13.0	.0129	36.2	
		1160	15	27	15	0.0014	13.7	.0126	30.0	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____MENISCUS CORRECTION, C_m: _____DISPERSING AGENT CORRECTION, C_d: _____DRY WEIGHT OF SOIL, U_s: _____% < N^o 60 SIEVE: _____
$$N_1 = \left(\frac{\% < N^o 60}{100} \right) N = \text{_____} N \text{ (COMBINED ANALYSIS).}$$

$$N = R \frac{G}{G-1} \times \frac{100}{U_s} = R \text{ _____}$$

REMARKS: _____

RB 1-2
140-145

100-145

- SIEVE ANALYSIS -

FILE NO: _____
SAMPLE NO: _____
DATE: _____
BY: _____

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT	
			RETAINED	PASSING
3 IN.				
2 1/2 IN.				
2 IN.				
1 1/2 IN.				
1 IN.				
3/4 IN.				
1/2 IN.				
3/8 IN.				
NO. 4				
NO. 10	0			100
NO. 20	0.1	0.2		99.8
NO. 40	0.4	0.8		99.2
NO. 60				
NO. 100	1.2	2.5		97.5
NO. 140				
NO. 200	3.1	6.5		93.5
PAN	42.1	89.9		
TOTAL	47.1	100.0		
REMARKS _____				

RB 1-3

180-190

FILE NO: _____

SAMPLE NO: _____

DATE: _____

BY: _____

HYDROMETER ANALYSIS

ASTM. D 422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R _H	TEMP. °C	R _H = R _H + (C _m C _d)	DIA- METER (mm)	L	K	N (%)	N ₁ (%)
		1/2	34		34.3	0.057	10.5	.0125	78.6	
		1	32		32.3	0.041	10.9	"	64.6	
		2	29		29.3	0.030	11.4	"	58.6	
		3	27	27.6	27.3	0.025	11.7	"	54.6	
		14	21.5	—	21.8	0.012	12.6	"	43.6	
		42	17.2	—	17.5	0.0070	13.3	"	35.0	
		88	15	28	15.4	0.0049	13.7	.0124	30.8	
		355	11	26	10.6	0.0025	14.3	.0127	21.2	
		1310	7.0	28	7.4	0.0013	15.0	.0124	14.8	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s : ASSUMED = _____; CALCULATED = _____MENISCUS CORRECTION, C_m : _____DISPERSING AGENT CORRECTION, C_d : _____DRY WEIGHT OF SOIL, U_s : _____

% < N°60 SIEVE: _____

 $N_1 = \left(\frac{\% < N°60}{100} \right) N = \text{_____} N$ (COMBINED ANALYSIS). $N = R \frac{G}{G-1} \times \frac{100}{U_s} = R \text{_____}$

REMARKS: _____

FILE NO: _____
 SAMPLE NO: _____
 DATE: _____
 BY: _____

- SIEVE ANALYSIS -

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT	
			RETAINED	PASSING
3 IN.				
2 1/2 IN.				
2 IN.				
1 1/2 IN.				
1 IN.				
3/4 IN.				
1/2 IN.				
3/8 IN.				
NO. 4				
NO. 10				
NO. 20	0.2	6.4		
NO. 40	0.1	2.2		
NO. 60				
NO. 100	5.7	1.4		
NO. 140				
NO. 200	4.5	3.2		
PAN	5.2	1.2		
TOTAL	50.0			
REMARKS _____				

GRAIN SIZE CHART

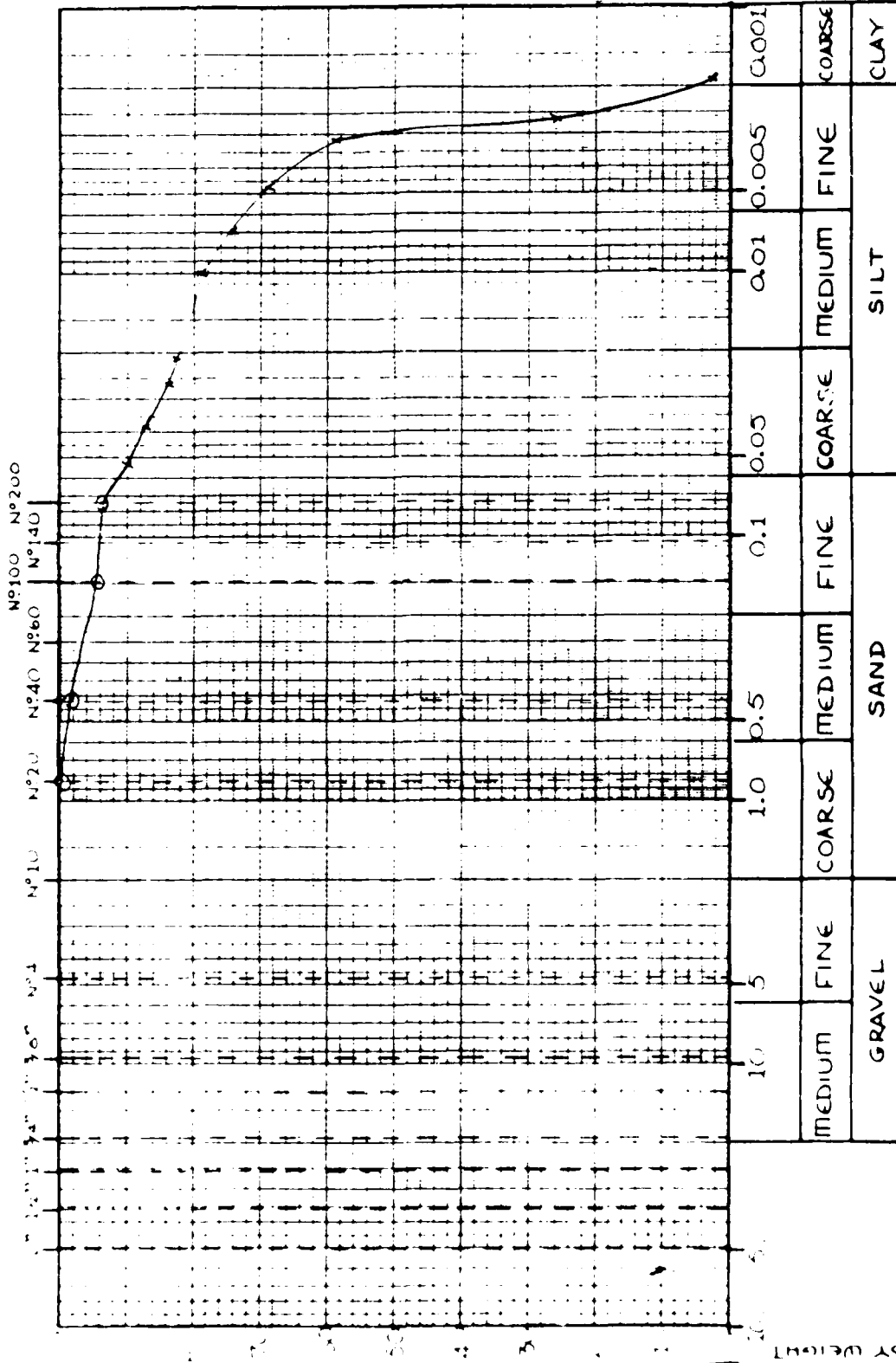
FILE NO:	
SAMPLE NO:	RB 2-1
DATE:	90'-100'
BY:	

GRAVEL	%
SAND	8%
SILT	86%
CLAY	6%

DESCRIPTION: _____

COMMENTS: _____

- SIEVE SIZES -



M.I.T. CLASSIFICATION
- GRAIN SIZE (mm) -

% FINER BY WEIGHT

2-1
90-100

FILE NO: _____
SAMPLE NO: _____
DATE: _____
BY: _____

HYDROMETER ANALYSIS

ASTM D 422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R _H	TEMP. °C	R _H = R _H + (CmCd)	DIA- METER (mm)	L	K	N (%)	N ₁ (%)
		1/2	45		45	0.053	8.1	.0126	90	
		1	43.5		43.5	0.038	9.0	"	87	
		2	42		42	0.027	9.2	"	84	
		3	41.5		41.5	0.022	9.3	"	83	
		14	34.6	27	34.6	0.010	9.6	"	79.2	
		32	37	—	37	0.0071	10.1	"	74	
		76	34.3	27	34.3	0.0047	10.5	"	68.6	
		170	30.0	26	29.6	0.0033	11.2	.0127	59.2	
		300	13.0	27	13.0	0.0027	14.0	.0126	26	
		770	3.0	24	1.7	0.0019	15.6	.0130	3.4	
		1130	1.0	27	1.0	0.0015	16.0	.0126	2.0	
		1350	0	26		0.0014	16.3	.0127		

DESCRIPTION: _____

SPECIFIC GRAVITY, G_s : ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, C_m : _____

DISPERSING AGENT CORRECTION, C_d : _____

DRY WEIGHT OF SOIL, U_s : _____

% < N°60 SIEVE: _____

$N_1 = \left(\frac{\% < N°60}{100} \right) N = \text{_____} N$ (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{U_s} = R \text{_____}$

REMARKS: _____

2-1
90-100

FILE NO: _____
SAMPLE NO: _____
DATE: _____
BY: _____

- SIEVE ANALYSIS -

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT	
			RETAINED	PASSING
3 IN.				
2 1/2 IN.				
2 IN.				
1 1/2 IN.				
1 IN.				
3/4 IN.				
1/2 IN.				
3/8 IN.				
NO. 4				
NO. 10	0			
NO. 20	0.3			
NO. 40	0.7			
NO. 60	4			
NO. 100	1			
NO. 140				
NO. 200	0.8			
PAN				
TOTAL	50.0			
REMARKS _____				

GRAIN SIZE CHART

FILE NO: _____

SAMPLE NO: RB 2-V

DATE: 135-140

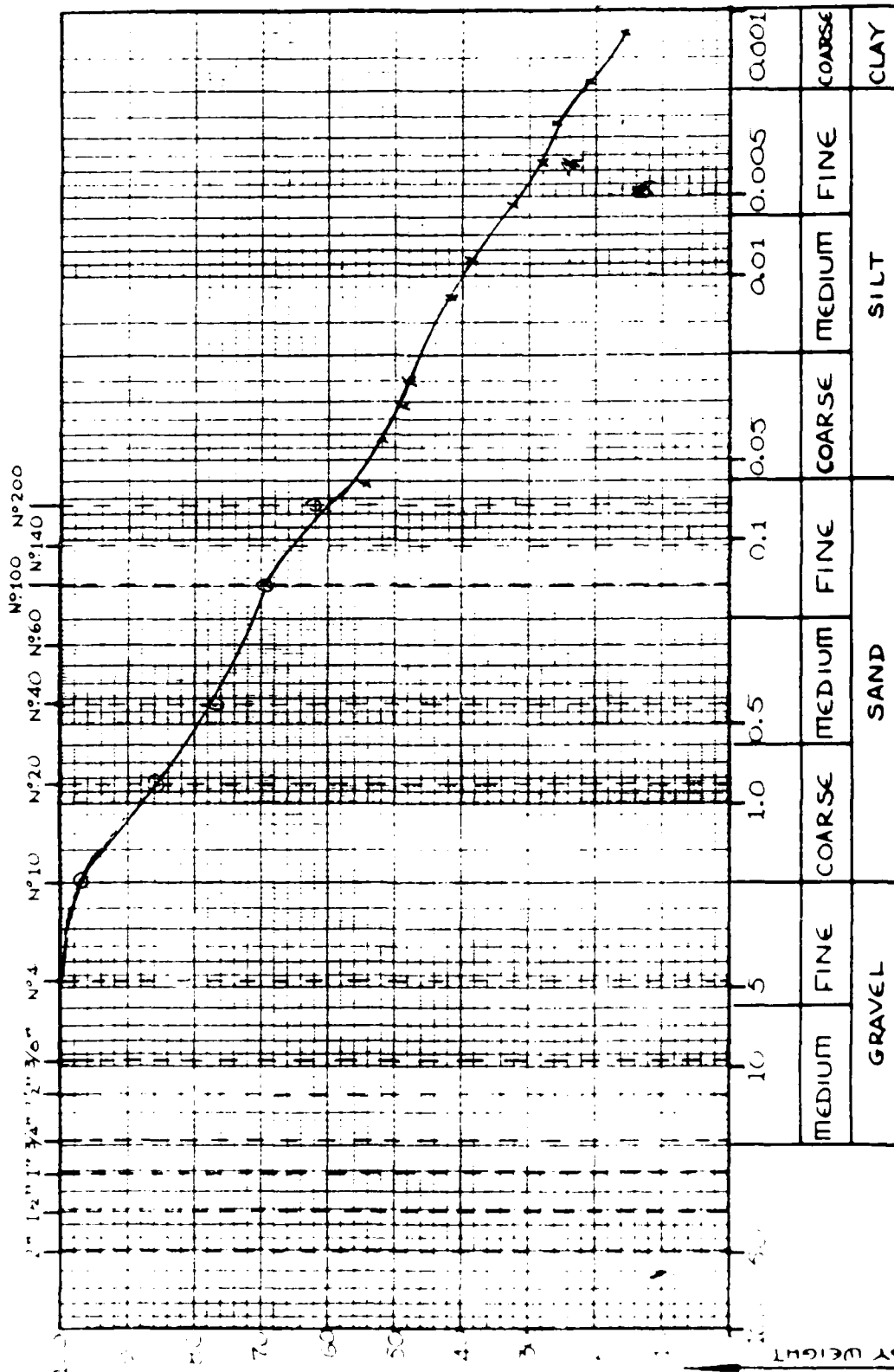
BY: _____

GRAVEL	3 %
SAND	41 %
SILT	54 %
CLAY	22 %

DESCRIPTION: _____

COMMENTS: _____

- SIEVE SIZES -



U.S.T. CLASSIFICATION
- GRAIN SIZE (mm) -

2-2
135'-140'

FILE NO: _____
SAMPLE NO: _____
DATE: _____
BY: _____

HYDROMETER ANALYSIS

ASTM. D 422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R _H	TEMP. °C	R _H = R _u + (CmCd)	DIA- METER (mm)	L	K	N (%)	N ₁ (%)
		1/2	27.5		27.5	0.061	11.6	.0126	55	
		1	26		26	0.043	11.9	"	52	
		2	24.5		24.5	0.031	12.1	"	49	
		3	24		24	0.025	12.2	"	48	
		14	21	27	21	0.012	12.7	"	42	
		27	19.5	-	19.5	0.0037	12.9	"	39	
		72	17	27	17.0	0.0054	13.3	"	34	
		165	14.5	26	14.1	0.0037	13.8	.0127	28.2	
		300	13.0	27	13.0	0.0027	14.0	.0126	26	
		765	11.0	24	10.6	0.0018	14.3	.0130	21.2	
		1125	9.0	27	9.0	0.0014	14.7	.0126	18	
		1345	8.5	26	8.1	0.0013	14.8	.0127	16.2	

DESCRIPTION: _____

SPECIFIC GRAVITY, G_s : ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, C_m : _____

DISPERSING AGENT CORRECTION, C_d : _____

DRY WEIGHT OF SOIL, U_s : _____

% < N°60 SIEVE: _____

$N_1 = \left(\frac{\% < N°60}{100} \right) N = \text{_____} N$ (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{U_s} = R \text{_____}$

REMARKS: _____

2-2
135-140

FILE NO: _____
SAMPLE NO: _____
DATE: _____
BY: _____

- SIEVE ANALYSIS -

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT	
			RETAINED	PASSING
3 IN.				
2 1/2 IN.				
2 IN.				
1 1/2 IN.				
1 IN.				
3/4 IN.				
1/2 IN.				
3/8 IN.				
NO. 4				
NO. 10	1.6			
NO. 20	5.3			
NO. 40	4.8			
NO. 60				
NO. 100	5.1			
NO. 140				
NO. 200	2.3			
PAN				
TOTAL	50.0			
REMARKS _____				

GRAIN SIZE CHART

FILE NO:

SAMPLE NO: RB 2-3

DATE: 156-160

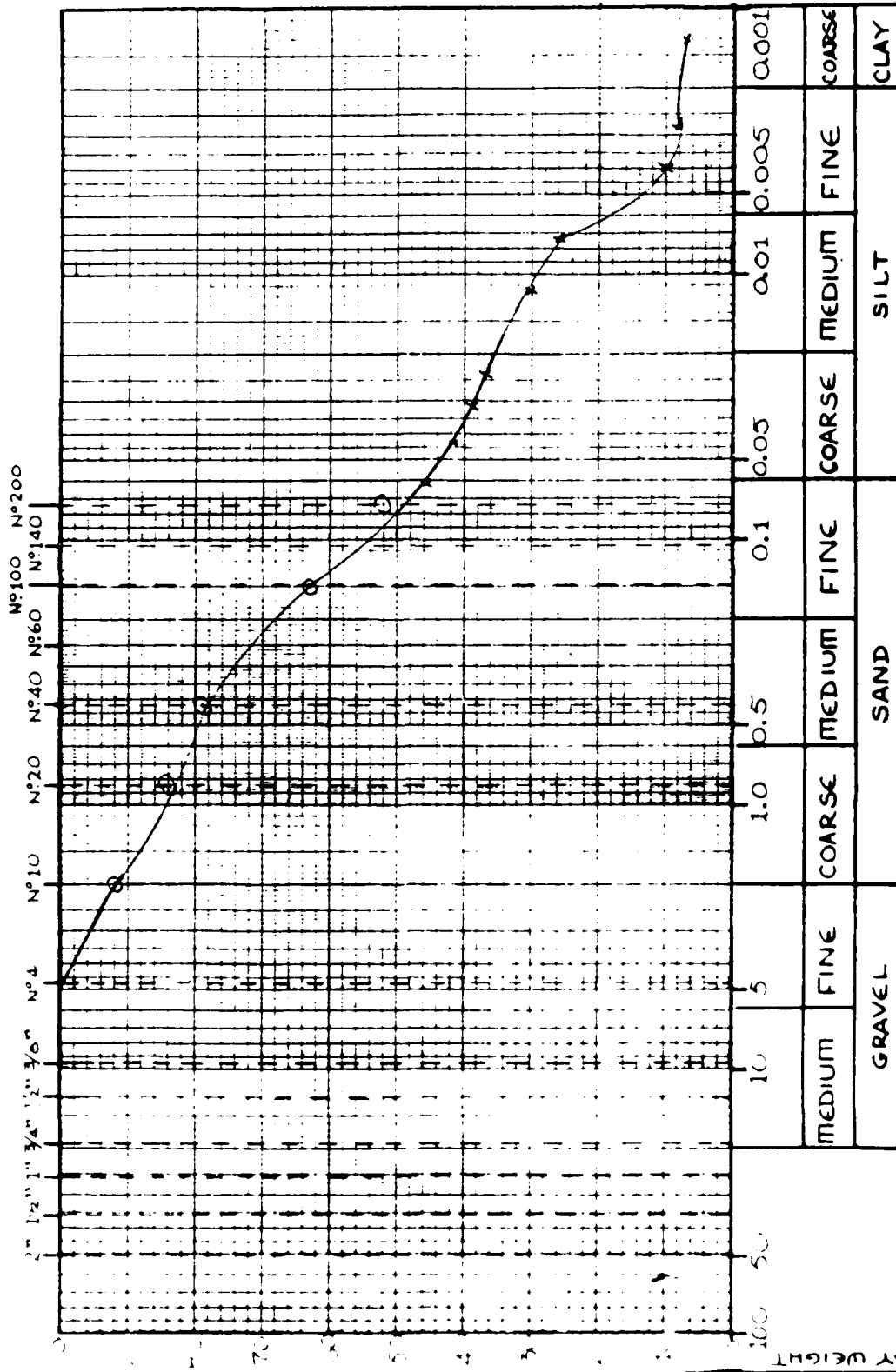
BY:

GRAVEL	8 %
SAND	96 %
SILT	3.8 %
CLAY	1.4 %

DESCRIPTION:

COMMENTS:

- SIEVE SIZES -



M.I.T. CLASSIFICATION
- GRAIN SIZE (mm) -

2-3

156'-160'

FILE NO: _____

SAMPLE NO: _____

DATE: _____

BY: _____

HYDROMETER ANALYSIS

ASTM. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R _H	TEMP. °C	R _H = R _H + (C _m C _d)	DIA- METER (mm)	L	K	N (%)	N ₁ (%)
		1/2	22		22.9	0.062	12.5	.0123	45.8	
		1	20		20.9	0.044	12.9	"	41.8	
		2	18.5		19.4	0.032	13.2	"	38.4	
		3	17.5		18.4	0.026	13.3	"	36.8	
		14	14	29	14.9	0.012	13.8	"	29.8	
		42	9	-	8.1	0.0073	14.7	"	16.2	
		150	5.0	24	4.9	0.0040	15.5	"	9.8	
		390	4.0	27	3.9	0.0026	15.5	.0126	7.8	
		1350	3	21	3.4	0.0013	15.6	.0124	6.8	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____MENISCUS CORRECTION, C_m: _____DISPERSING AGENT CORRECTION, C_d: _____DRY WEIGHT OF SOIL, U_s: _____

% < N°60 SIEVE: _____

$$N_1 = \left(\frac{\% < N°60}{100} \right) N = \text{_____} N \text{ (COMBINED ANALYSIS).}$$

$$N = R \frac{G}{G-1} \times \frac{100}{U_s} = R \text{ _____}$$

REMARKS: _____

2-3
150-160

FILE NO: _____
SAMPLE NO: _____
DATE: _____
BY: _____

- SIEVE ANALYSIS -

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT	
			RETAINED	PASSING
3 IN.				
2 1/2 IN.				
2 IN.				
1 1/2 IN.				
1 IN.				
3/4 IN.				
1/2 IN.				
3/8 IN.				
NO. 4				100.0
NO. 10	4.0	8.0		92
NO. 20	3.8	7.6		84.4
NO. 40	2.7	5.4		79.0
NO. 60				
NO. 100	8.0	16.0		63.0
NO. 140				
NO. 200	5.7	11.4		51.6
PAN	25.8	51.6		0
TOTAL	50.0	100.0		
REMARKS _____				

GRAIN SIZE CHART

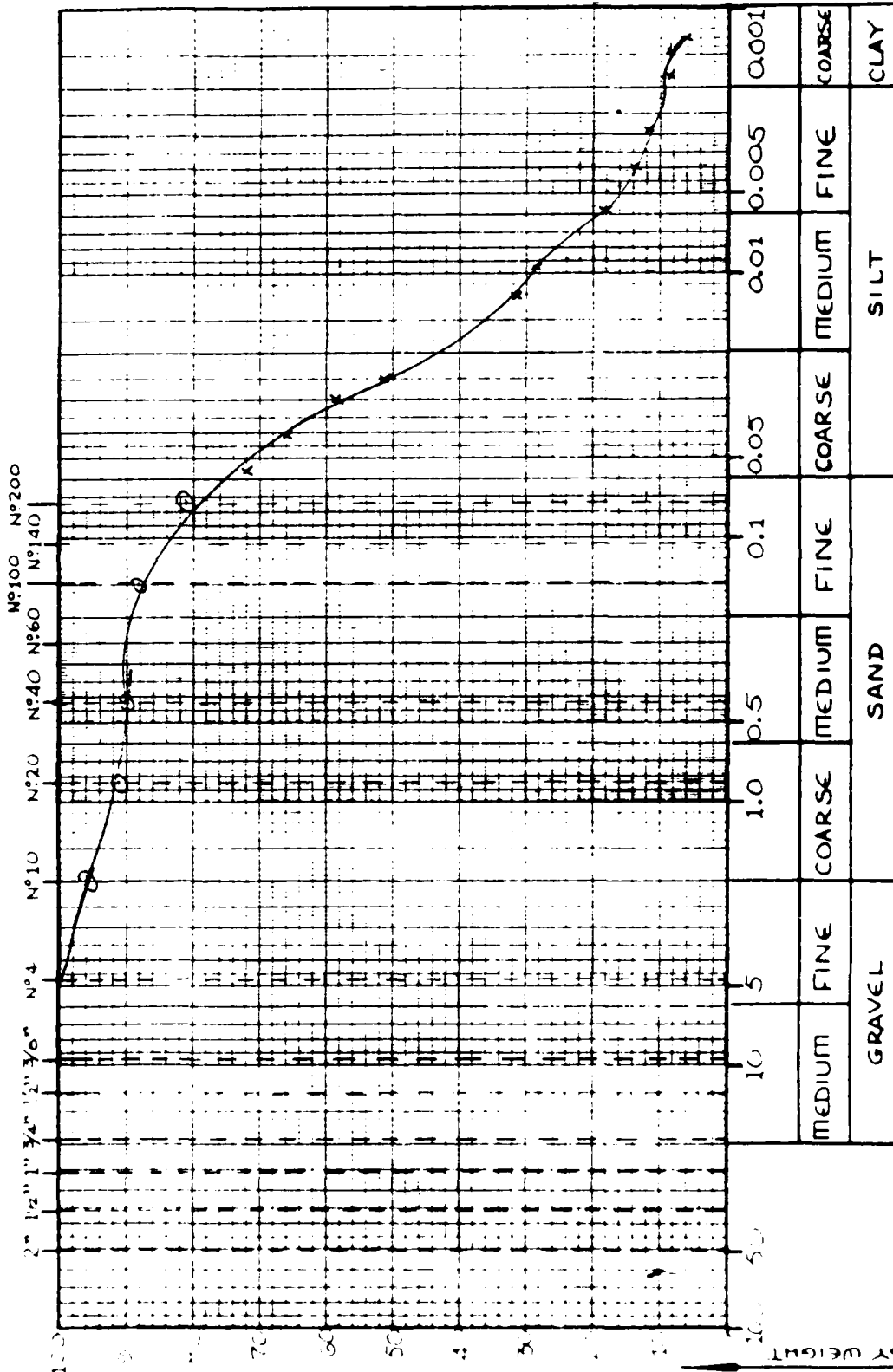
FILE NO:
 SAMPLE NO: RB 2-94
 DATE: 135-180'
 BY:

GRAVEL	4 %
SAND	80 %
SILT	67 %
CLAY	1 %

DESCRIPTION:

COMMENTS

- SIEVE SIZES -



U.T. CLASSIFICATION
 - GRAIN SIZE (mm) -

% FINER BY WEIGHT

2-9
135-180

FILE NO: _____
SAMPLE NO: _____
DATE: _____
BY: _____

HYDROMETER ANALYSIS

AST.M. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R _H	TEMP. °C	R _H = R _H + (Cm/Cd)	DIA- METER (mm)	L	K	N (%)	N ₁ (%)
		1/2	36		36	0.057	10.2	.0136	72	
		1	33		33	0.041	10.7	"	66	
		2	29		29	0.030	11.4	"	58	
		3	25.5		25.5	0.025	11.9	"	51	
		14	16		16	0.012	13.5	"	32	
		24	14	27	14	0.0096	13.8	"	28	
		70	9.5	26	9.1	0.0058	14.6	.0137	18.2	
		160	7.2	26	6.8	0.0039	15.0	"	13.6	
		300	6.0	27	6.0	0.0028	15.2	.0136	12.0	
		760	5.5	24	4.2	0.0018	15.3	.0130	8.4	
		1120	4.0	27	4.0	0.0015	15.5	.0136	8.0	
		1340	3.5	26	3.1	0.0014	15.6	.0137	6.2	

DESCRIPTION: _____

SPECIFIC GRAVITY, G_s: ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, C_m: _____

DISPERSING AGENT CORRECTION, C_d: _____

DRY WEIGHT OF SOIL, U_s: _____

% < N°60 SIEVE: _____

$N_1 = \left(\frac{\% < N°60}{100} \right) N = \text{_____} N$ (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{U_s} = R \text{_____}$

REMARKS: _____

2-9
135-180

FILE NO: _____
SAMPLE NO: _____
DATE: _____
BY: _____

- SIEVE ANALYSIS -

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT	
			RETAINED	PASSING
3 IN.				
2 1/2 IN.				
2 IN.				
1 1/2 IN.				
1 IN.				
3/4 IN.				
1/2 IN.				
3/8 IN.				
NO. 4				
NO. 10	2.1			
NO. 20	2.2			
NO. 40	0.7			
NO. 60				
NO. 100	1.2			
NO. 140				
NO. 200	3.2			
PAN				
TOTAL	50.0			
REMARKS _____				

GRAIN SIZE CHART

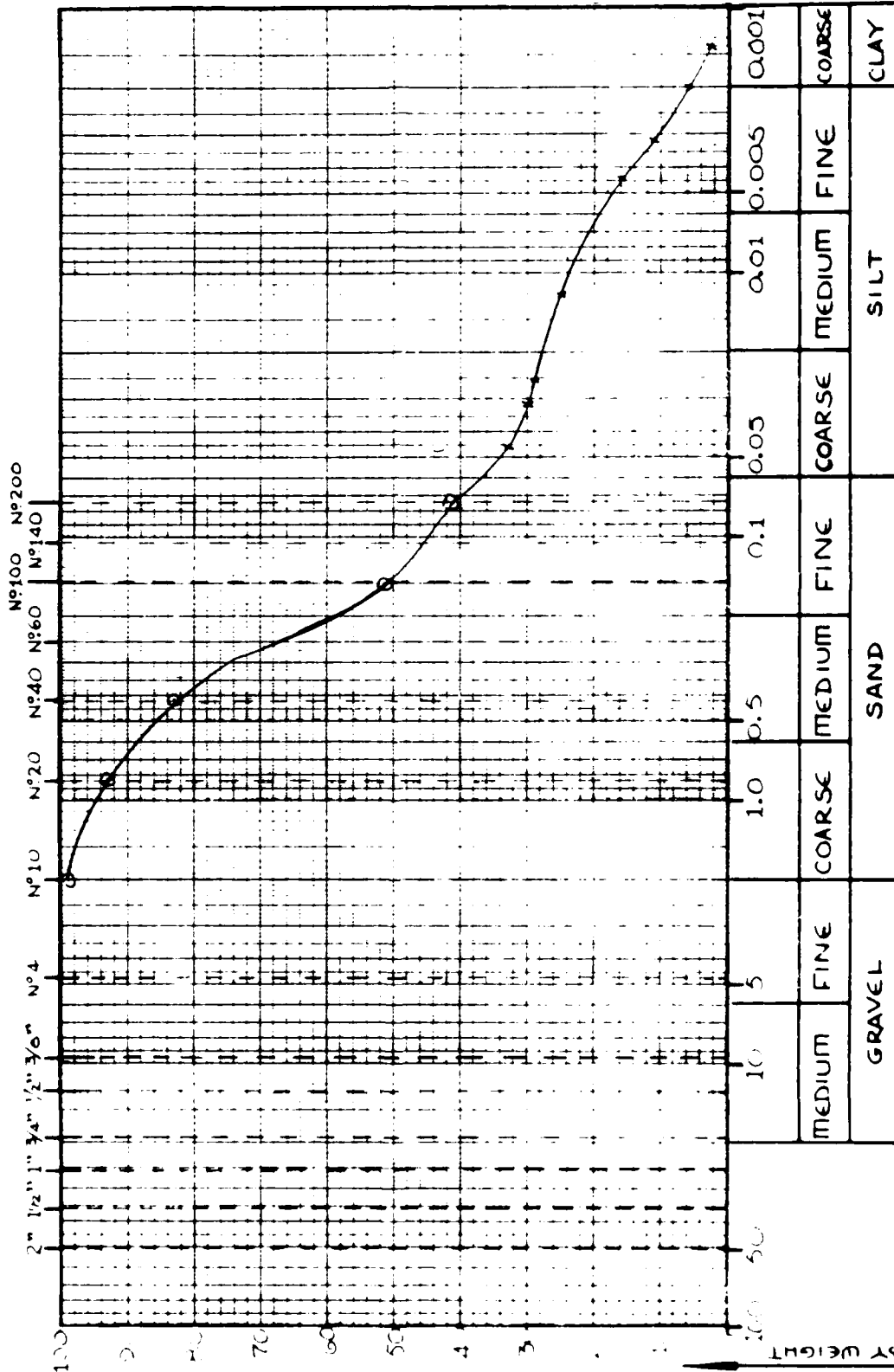
FILE NO: 1604-1
 SAMPLE NO: 3-1
 DATE: 9-1-130'
 BY:

GRAVEL	%
SAND	64
SILT	30
CLAY	6

DESCRIPTION:

COMMENTS:

- SIEVE SIZES -



U.S.C.S. CLASSIFICATION
 - GRAIN SIZE (mm) -

3-2
95-130

FILE NO: _____
SAMPLE NO: _____
DATE: _____
BY: _____

HYDROMETER ANALYSIS

AST.M. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R _H	TEMP. °C	R _H + R _W + (C _{mc})	DIA- METER (mm)	L	K	N (%)	N ₁ (%)
		1/2	18	—	.064	18.4	13.2	.0124	36.8	
		1	16	—	.046	16.4	13.5	"	32.8	
		2	14.5	—	.032	14.9	13.7	"	29.8	
		3	14.0	—	.026	14.4	13.8	"	28.8	
		14	12.0	28	.012	12.4	14.2	"	24.8	
		—	—	—	—	—	1	"	—	
		114	7.5	28	.0044	7.9	14.9	"	15.8	
	0100	235	5.3	27	.0032	5.3	15.3	.0124	10.6	
	0730	625	4.0	24.5	.0020	3.0	15.5	.0130	6.0	
	1930	1345	1.0	28	.0013	1.4	16.0	.0124	2.8	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, C_m: _____

DISPERSING AGENT CORRECTION, C_d: _____

DRY WEIGHT OF SOIL, U_s: _____

% < N^o 60 SIEVE: _____

$N_1 = \left(\frac{\% < N^{o} 60}{100} \right) N = \text{_____} N$ (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{U_s} = R \text{_____}$

REMARKS: _____

2-2
95-130

FILE NO: _____
SAMPLE NO: _____
DATE: _____
BY: _____

- SIEVE ANALYSIS -

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT	
			RETAINED	PASSING
3 IN.				
2 1/2 IN.				
2 IN.				
1 1/2 IN.				
1 IN.				
3/4 IN.				
1/2 IN.				
3/8 IN.				
NO. 4				100.0
NO. 10	0.9	1.8		98.2
NO. 20	2.5	5.0		93.2
NO. 40	5.3	10.6		82.6
NO. 60				
NO. 100	15.8	31.6		41.0
NO. 140				
NO. 200	4.4	9.8		61.2
PAN	20.6	41.2		
TOTAL	50.0	100.0		
REMARKS _____				

GRAIN SIZE CHART

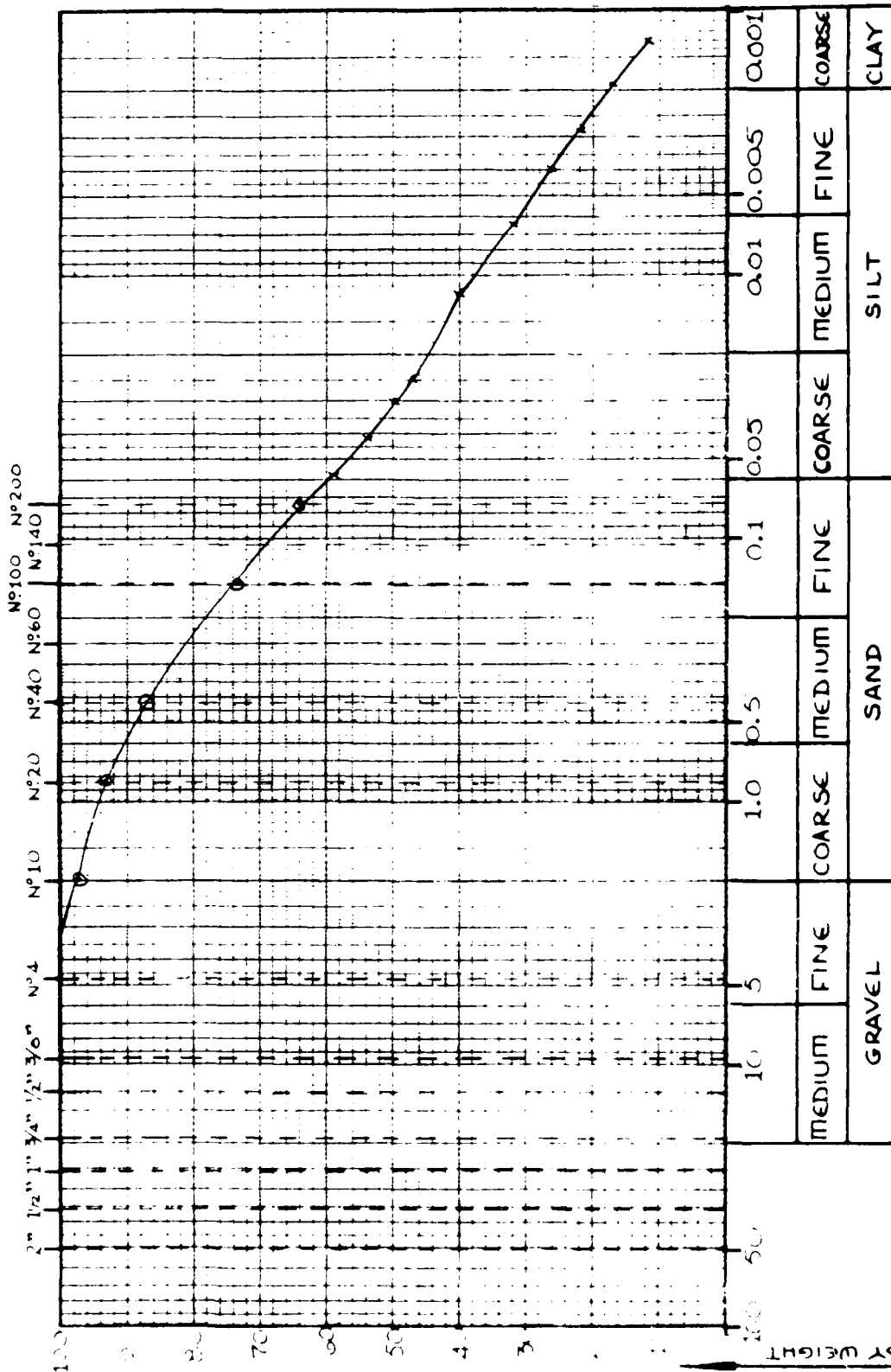
FILE NO: 1604-1
 SAMPLE NO: 3-2
 DATE: 155'-165'
 BY:

GRAVEL	%
SAND	40 %
SILT	42 %
CLAY	18 %

DESCRIPTION:

COMMENTS:

- SIEVE SIZES -



U.S.T. CLASSIFICATION
 - GRAIN SIZE (mm) -

3-2
155-165

FILE NO: _____
SAMPLE NO: _____
DATE: _____
BY: _____

HYDROMETER ANALYSIS

ASTM. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R _H	TEMP. °C	R _H = R _H + (CmCd)	DIA- METER (mm)	L	K	N (%)	N ₁ (%)
		1/2	29	—	29.4	.059	11.4	.0124	58.8	
		1	26.5	—	26.9	.042	11.8	"	53.8	
		2	24.5	—	24.9	.030	12.1	"	49.8	
		3	23	28	23.4	.025	12.4	"	46.8	
		14	19.5	—	19.9	.012	13.0	"	39.8	
		51	15.5	28	15.9	.0064	13.6	"	31.6	
		138	12.5	28	12.9	.0040	14.1	"	25.8	
	0100	265	11.0	27	11.0	.0029	14.3	.0126	22.0	
	0730	655	9.5	24.5	8.5	.0019	14.6	.0130	19.0	
	1930	1375	5.5	28	5.9	.0013	15.2	.0124	11.8	

DESCRIPTION: _____
 SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____
 MENISCUS CORRECTION, C_m: _____
 DISPERSING AGENT CORRECTION, C_d: _____
 DRY WEIGHT OF SOIL, U_s: _____
 % < N°60 SIEVE: _____

$$N_1 = \left(\frac{\% < N°60}{100} \right) N = \text{_____} N \text{ (COMBINED ANALYSIS).}$$

$$N = R \frac{G}{G-1} \times \frac{100}{U_s} = R \text{_____}$$

 REMARKS: _____

3-2
155-165

FILE NO: _____
SAMPLE NO: _____
DATE: _____
BY: _____

- SIEVE ANALYSIS -

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT	
			RETAINED	PASSING
3 IN.				
2 1/2 IN.				
2 IN.				
1 1/2 IN.				
1 IN.				
3/4 IN.				
1/2 IN.				
3/8 IN.				
NO. 4				100-
NO. 10	1.3	2.6		92.4
NO. 20	2.1	4.2		93.2
NO. 40	3.0	6.0		97.2
NO. 60				
NO. 100	7.3	14.6		92.6
NO. 140				
NO. 200	4.2	8.4		94.2
PAN	32.1	64.2		0
TOTAL	50.0	100.0		
REMARKS _____				

GRAIN SIZE CHART

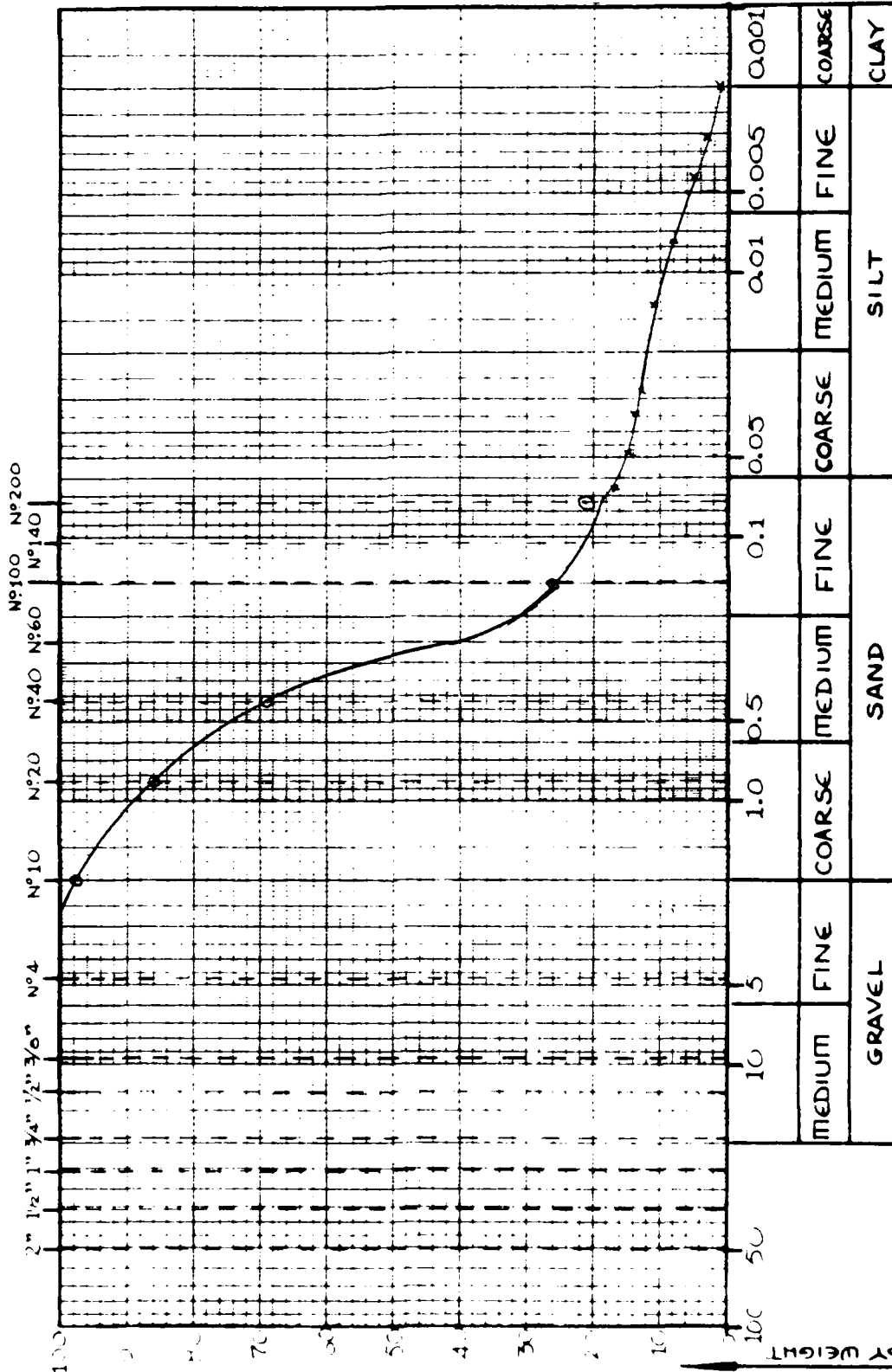
FILE NO: 1604-1
 SAMPLE NO: RB3-3
 DATE: 70-180
 BY:

GRAVEL	2 %
SAND	82 %
SILT	15 %
CLAY	1 %

DESCRIPTION:

COMMENTS

- SIEVE SIZES -



M.I.T. CLASSIFICATION
 - GRAIN SIZE (mm) -

% FINER BY WEIGHT

3-3
170-180

FILE NO: _____
SAMPLE NO: _____
DATE: _____
BY: _____

HYDROMETER ANALYSIS

ASTM D 422-63

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R _H	TEMP. °C	R _H = (R _H + C _m C _d)	DIA- METER (mm)	L	K	N (%)	N ₁ (%)
		1/2	8.0	—	1067	8.4	14.8	.0124	16.8	
		1	7.0	—	1048	7.4	15.0	"	14.8	
		2	6.5	—	1034	6.9	15.1	"	13.8	
		3	6.0	28	1028	6.4	15.2	"	12.8	
		14	5.0	—	1013	5.4	15.3	"	10.8	
		40	3.5	28	10077	3.9	15.5	"	7.8	
		126	2.0	28	10044	2.4	15.8	"	4.8	
	0100	250	1.5	27	10031	1.5	15.9	.0126	3.0	
	0730	640	1.5	24.5	10020	0.5	15.9	.0130	1.0	
	1930	1360	-1.0	28	10013		16.3	.0124		

DESCRIPTION: _____

SPECIFIC GRAVITY, G_s : ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, C_m : _____

DISPERSING AGENT CORRECTION, C_d : _____

DRY WEIGHT OF SOIL, U_s : _____

% < N°60 SIEVE: _____

$N_1 = \left(\frac{\% < N°60}{100} \right) N = \text{_____} N$ (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{U_s} = R \text{_____}$

REMARKS: _____

3-3
170-180

FILE NO: _____
SAMPLE NO: _____
DATE: _____
BY: _____

- SIEVE ANALYSIS -

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT	
			RETAINED	PASSING
3 IN.				
2 1/2 IN.				
2 IN.				
1 1/2 IN.				
1 IN.				
3/4 IN.				
1/2 IN.				
3/8 IN.				
NO. 4				100.0
NO. 10	1.1	2.2		97.8
NO. 20	6.1	12.2		85.6
NO. 40	5.5	17.0		68.6
NO. 60				
NO. 100	21.1	42.5		26.4
NO. 140				
NO. 200	2.5	5.0		21.4
PAN	10.7	21.4		0
TOTAL	50.0	100.0		
REMARKS _____				

GRAIN SIZE CHART

FILE NO:

SAMPLE NO: RB 4-1

DATE: 95-10

BY:

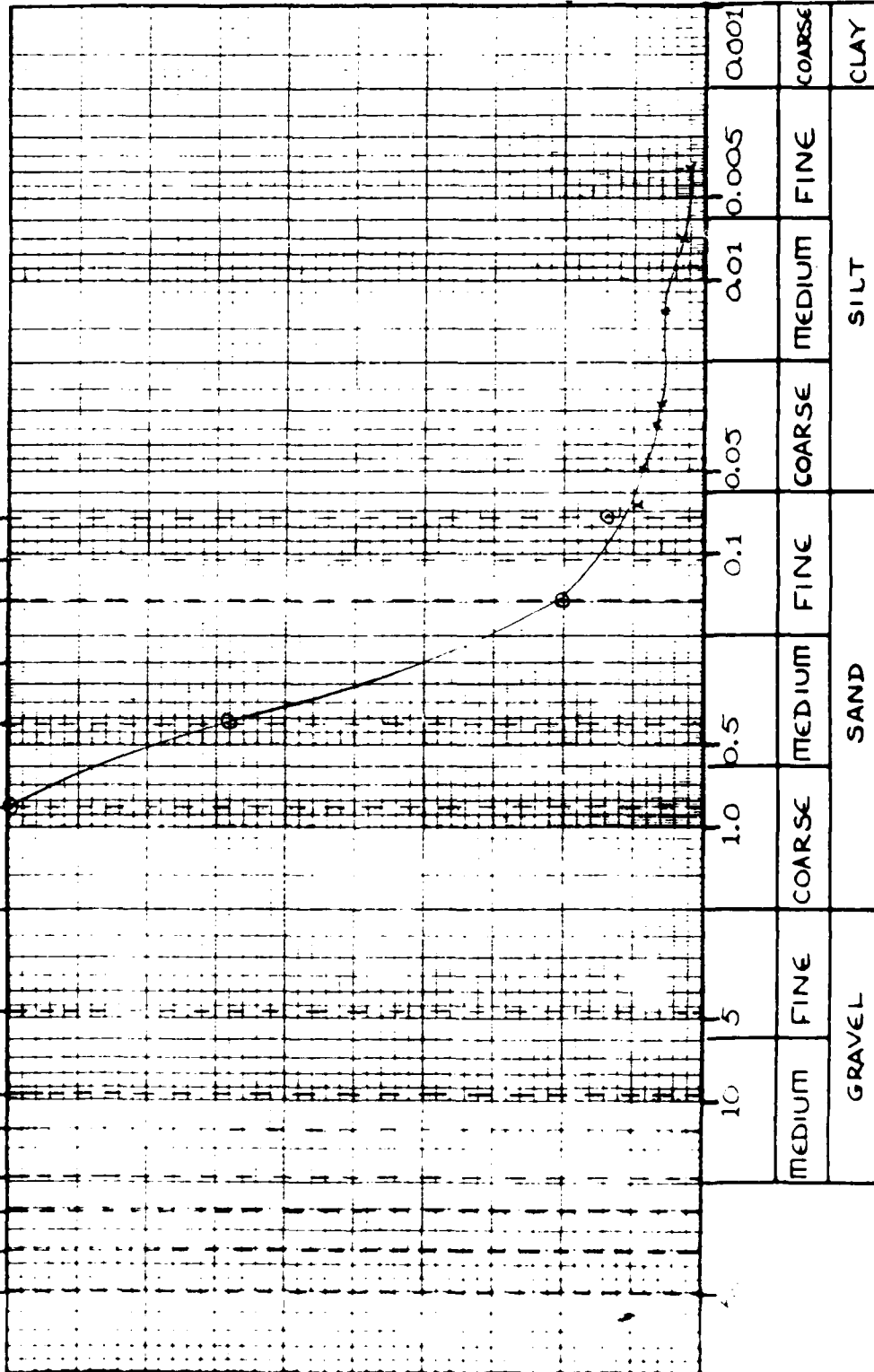
GRAVEL	%
SAND	10
SILT	10
CLAY	0

DESCRIPTION:

COMMENTS

- SIEVE SIZES -

2" 1 1/2" 1" 3/4" 3/8" 1/2" 3/16" No. 4 No. 10 No. 20 No. 40 No. 60 No. 100 No. 200



M.I.T. CLASSIFICATION
- GRAIN SIZE (mm) -

% FINER BY WEIGHT

FILE NO: _____
SAMPLE NO: _____
DATE: _____
BY: _____

A.S.T.M. D 422-63.

[illegible]

REMARKS: _____

4-1
95-100

FILE NO: _____
SAMPLE NO: _____
DATE: _____
BY: _____

- SIEVE ANALYSIS -

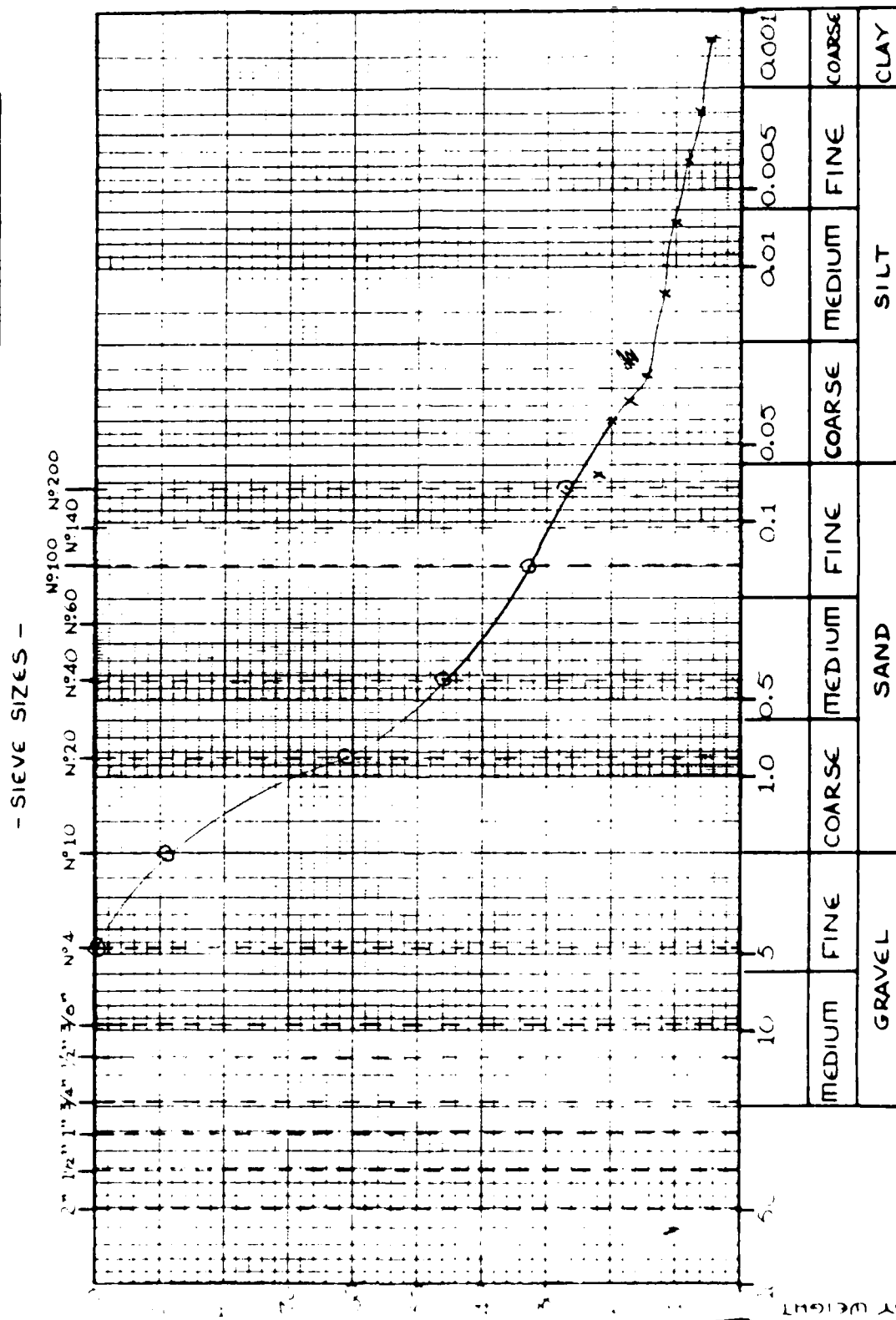
SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT	
			RETAINED	PASSING
3 IN.				
2 1/2 IN.				
2 IN.				
1 1/2 IN.				
1 IN.				
3/4 IN.				
1/2 IN.				
3/8 IN.				
NO. 4				
NO. 10				100.0
NO. 20	0.5	1.0		99
NO. 40	15.4	30.8		68.2
NO. 60				
NO. 100	24.0	48.0		20.2
NO. 140				
NO. 200	3.1	6.2		14.0
PAN	9.0	14.0		0
TOTAL	50.0	100.0		
REMARKS _____				

BY:

GRAVEL	4%
SAND	66%
SILT	17%
CLAY	4%

DESCRIPTION:

COMMENTS



M.I.T. CLASSIFICATION
-GRAIN SIZE (mm):-

4. FINGER BY WEIGHT

4-v

135-141

FILE NO: _____

SAMPLE NO: _____

DATE: _____

BY: _____

HYDROMETER ANALYSIS

ASTM. D 422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R _H	TEMP. °C	R _H = R _H + (C _m C _d)	DIA- METER (mm)	L	K	N (%)	N ₁ (%)
		1/2	10		10.9	0.066	14.5	.0023	21.8	
		1	9		9.9	0.047	14.7	"	19.8	
		2	7.5		8.4	0.034	14.9	"	16.8	
		3	6.5		7.4	0.027	14.9	"	14.8	
		14	5.0	29	5.9	0.013	15.3	"	11.8	
		50	4.0	-	4.9	0.0068	15.5	"	9.8	
		160	3.0	29	3.9	0.0027	15.6	"	7.8	
		400	3.0	27	3.0	0.0025	"	.0126	6.0	
		1365	2.0	28	2.4	0.0013	15.8	.0124	4.8	

DESCRIPTION: _____

SPECIFIC GRAVITY, G_s : ASSUMED = _____; CALCULATED = _____MENISCUS CORRECTION, C_m : _____DISPERSING AGENT CORRECTION, C_d : _____DRY WEIGHT OF SOIL, U_s : _____

% < N°60 SIEVE: _____

 $N_1 = \left(\frac{\% < N°60}{100} \right) N = \text{_____} N$ (COMBINED ANALYSIS). $N = R \frac{G}{G-1} \times \frac{100}{U_s} = R \text{_____}$

REMARKS: _____

4-2

125-141

- SIEVE ANALYSIS -

FILE NO: _____
 SAMPLE NO: _____
 DATE: _____
 BY: _____

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT	
			RETAINED	PASSING
3 IN.				
2 1/2 IN.				
2 IN.				
1 1/2 IN.				
1 IN.				
3/4 IN.				
1/2 IN.				
3/8 IN.				
NO. 4				100.0
NO. 10	57	11.4		88.6
NO. 20	13.8	27.6		61.0
NO. 40	7.4	14.8		46.2
NO. 60				
NO. 100	6.5	13.0		33.2
NO. 140				
NO. 200	3.0	6.0		27.2
PAN	13.6	27.2		0
TOTAL	50.0	100.0		
REMARKS _____				

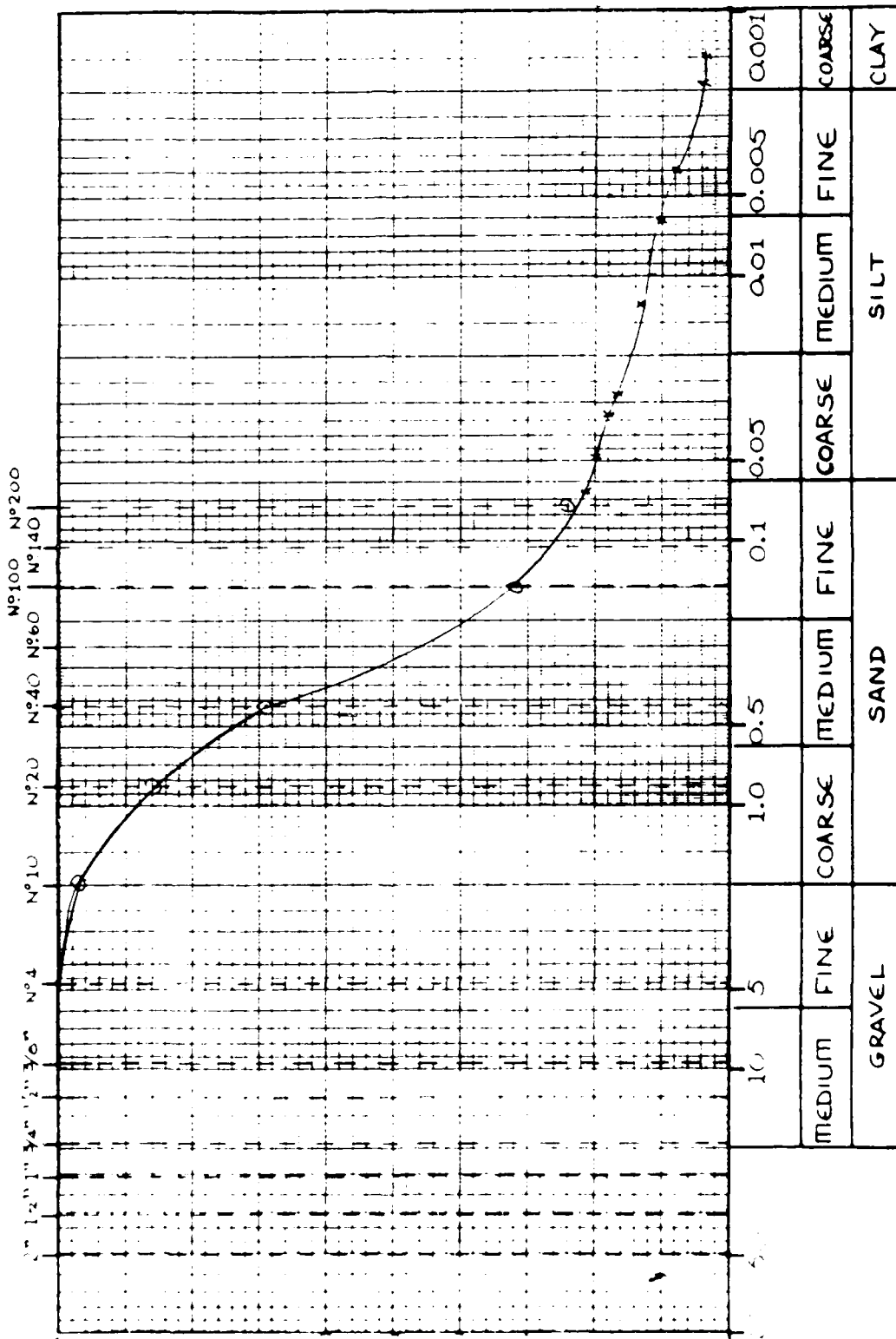
GRAIN SIZE CHART

FILE NO: _____
 SAMPLE NO: RB 4-3
 DATE: 155-160
 BY: _____

GRAVEL	3 %
SAND	76 %
SILT	17 %
CLAY	4 %

DESCRIPTION: _____
 COMMENTS: _____

- SIEVE SIZES -



M.I.T. CLASSIFICATION
 - GRAIN SIZE (mm) -

% FINER BY WEIGHT

4-3
155-160

FILE NO:	
SAMPLE NO:	
DATE:	
BY:	

HYDROMETER ANALYSIS

A.S.T.M. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R _H	TEMP. °C	R _H = R _H + (CmCd)	DIA- METER (mm)	L	K	N (%)	N (%)
		1/2	11		11.0	0.067	14.3	.0126	22	
		1	10		10.0	0.048	14.5	"	20	
		2	9		9.0	0.034	14.7	"	18	
		3	8.5		8.5	0.028	14.8	"	17	
		14	7	27	7.0	0.013	15.0	"	14	
		65	5.2	26	4.8	0.0062	15.3	.0127	9.6	
		155	4.5	26	4.1	0.0040	15.4	"	8.2	
		755	3.5	24	2.2	0.0019	15.5	.0130	4.4	
		1115	2.0	27	2.0	0.0015	15.6	.0126	4.0	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, C_m: _____

DISPERSING AGENT CORRECTION, C_d: _____

DRY WEIGHT OF SOIL, U_s: _____

% < N°60 SIEVE: _____

$N_1 = \left(\frac{\% < N°60}{100} \right) N = \text{_____} N$ (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{U_s} = R \text{_____}$

REMARKS: _____

AD-A156 283

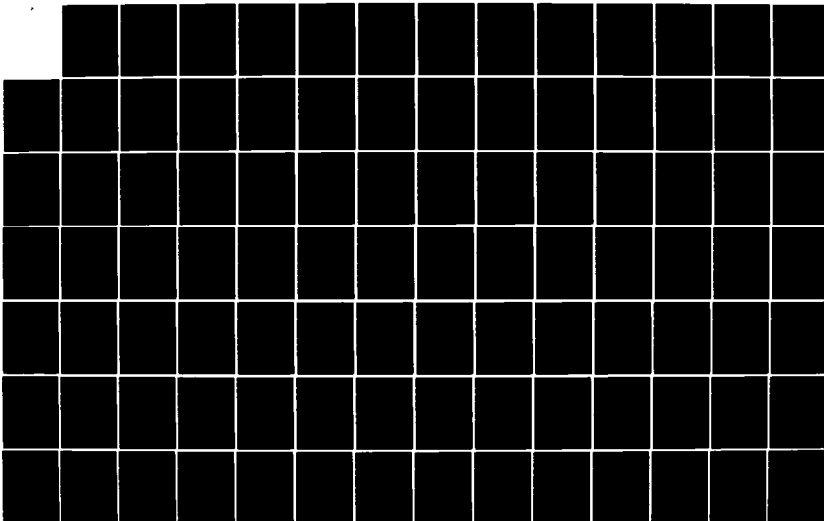
INSTALLATION RESTORATION PROGRAM PHASE II (STAGE 2-1)
VOLUME 2(U) RADIAN CORP AUSTIN TX R W BAUER MAY 85
F33615-83-D-4001

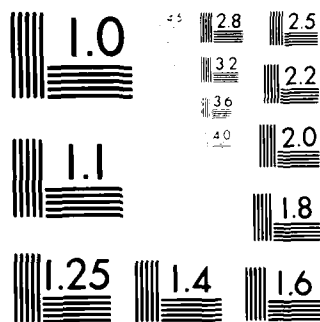
04/10

UNCLASSIFIED

F/G 13/2

NL





MICROCOPY RESOLUTION TEST CHART
 NATIONAL BUREAU OF STANDARDS-1963-A

1-3
155-160

FILE NO: _____
SAMPLE NO: _____
DATE: _____
BY: _____

- SIEVE ANALYSIS -

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT	
			RETAINED	PASSING
3 IN.				
2 1/2 IN.				
2 IN.				
1 1/2 IN.				
1 IN.				
3/4 IN.				
1/2 IN.				
3/8 IN.				
NO. 4				
NO. 10	1.5			
NO. 20	5.7			
NO. 40	8.3			
NO. 60				
NO. 100	18.5			
NO. 140				
NO. 200	4.1			
PAN				
TOTAL				
REMARKS _____				

GRAIN SIZE CHART

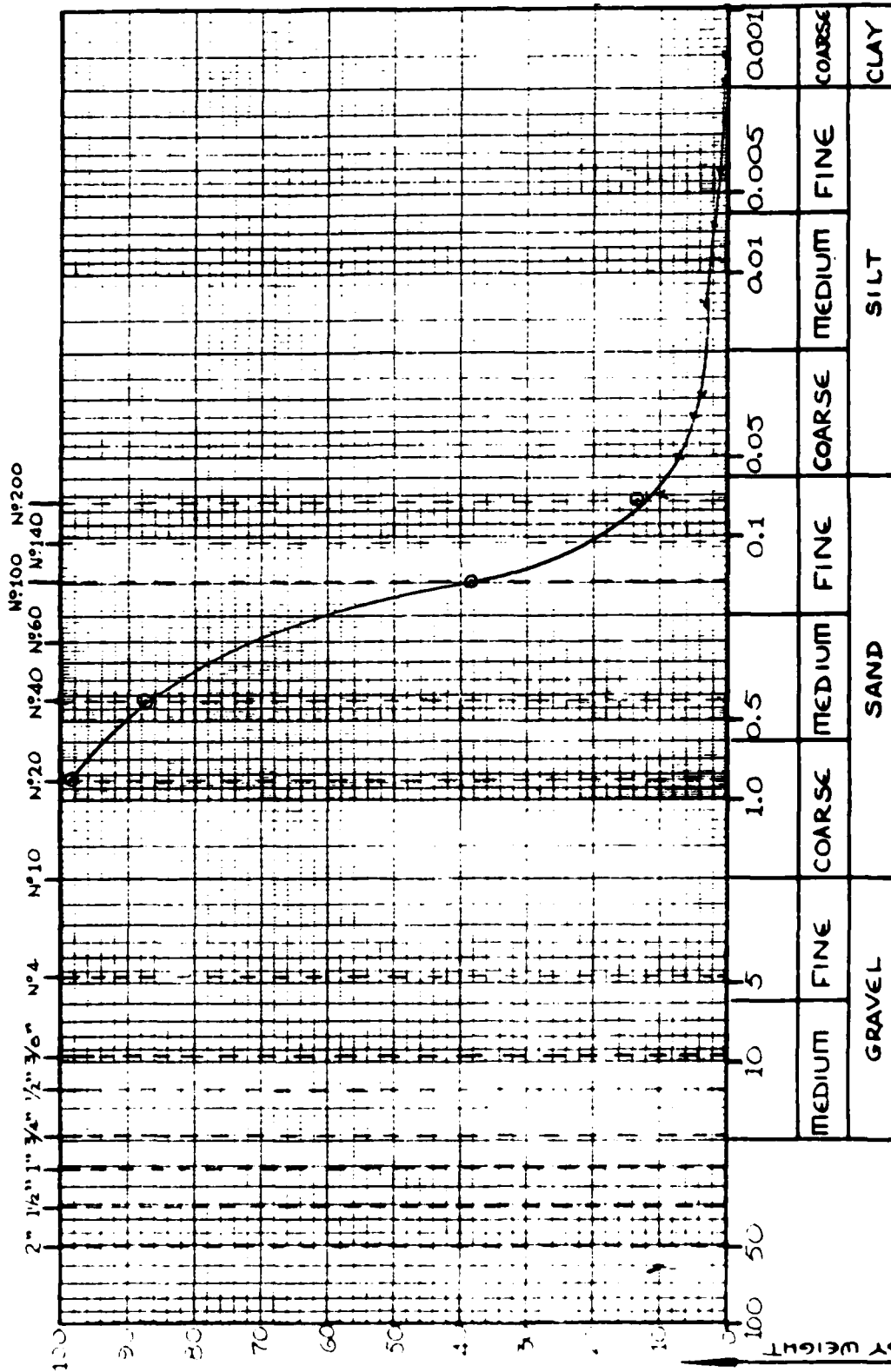
FILE NO: _____
 SAMPLE NO: RB 4-4
 DATE: 190-220
 BY: _____

GRAVEL	%
SAND	91
SILT	9
CLAY	0

DESCRIPTION:

COMMENTS

- SIEVE SIZES -



U.S.T. CLASSIFICATION
 - GRAIN SIZE (mm) -

4-4

190-220

FILE NO: _____

SAMPLE NO: _____

DATE: _____

BY: _____

HYDROMETER ANALYSIS

ASTM D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R _H	TEMP. °C	R _H = R _H + (C _m C _d)	DIA- METER (mm)	L	K	N (%)	N ₁ (%)
		1/2	5		5.0	0.070	15.3	.0126	10.0	
		1	3.5		3.5	0.050	15.5	"	7.0	
		2	2.5		2.5	0.035	15.7	"	5.0	
		3	2		2.0	0.029	15.8	"	4.0	
		14	2	27	2.0	0.013	15.8	"	4.0	
		60	1.5	26	1.1	0.0065	15.9	.0127	2.2	
		150	1.0	26	0.6	0.0042	16.0	"	1.2	
		250	1.5	24	0.2	0.0019	16.1	.0130	0.4	
		1110	0.2	27	0.2	0.0015	16.3	.0126	0.4	

DESCRIPTION: _____

SPECIFIC GRAVITY, G_s : ASSUMED = _____; CALCULATED = _____MENISCUS CORRECTION, C_m : _____DISPERSING AGENT CORRECTION, C_d : _____DRY WEIGHT OF SOIL, U_s : _____

% < N°60 SIEVE: _____

 $N_1 = \left(\frac{\% < N°60}{100} \right) N = \text{_____} N$ (COMBINED ANALYSIS). $N = R \frac{G}{G-1} \times \frac{100}{U_s} = R \text{_____}$

REMARKS: _____

4-4

190-220

- SIEVE ANALYSIS -

FILE NO: _____

SAMPLE NO: _____

DATE: _____

BY: _____

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT	
			RETAINED	PASSING
3 IN.				
2 1/2 IN.				
2 IN.				
1 1/2 IN.				
1 IN.				
3/4 IN.				
1/2 IN.				
3/8 IN.				
NO. 4				
NO. 10	0			100.0
NO. 20	0.7	1.4		98.6
NO. 40	5.4	10.8		87.8
NO. 60				
NO. 100	24.7	49.4		38.4
NO. 140				
NO. 200	12.4	24.8		13.6
PAN	6.8	13.6		0
TOTAL	50.0	100.0		

REMARKS _____

GRAIN SIZE CHART

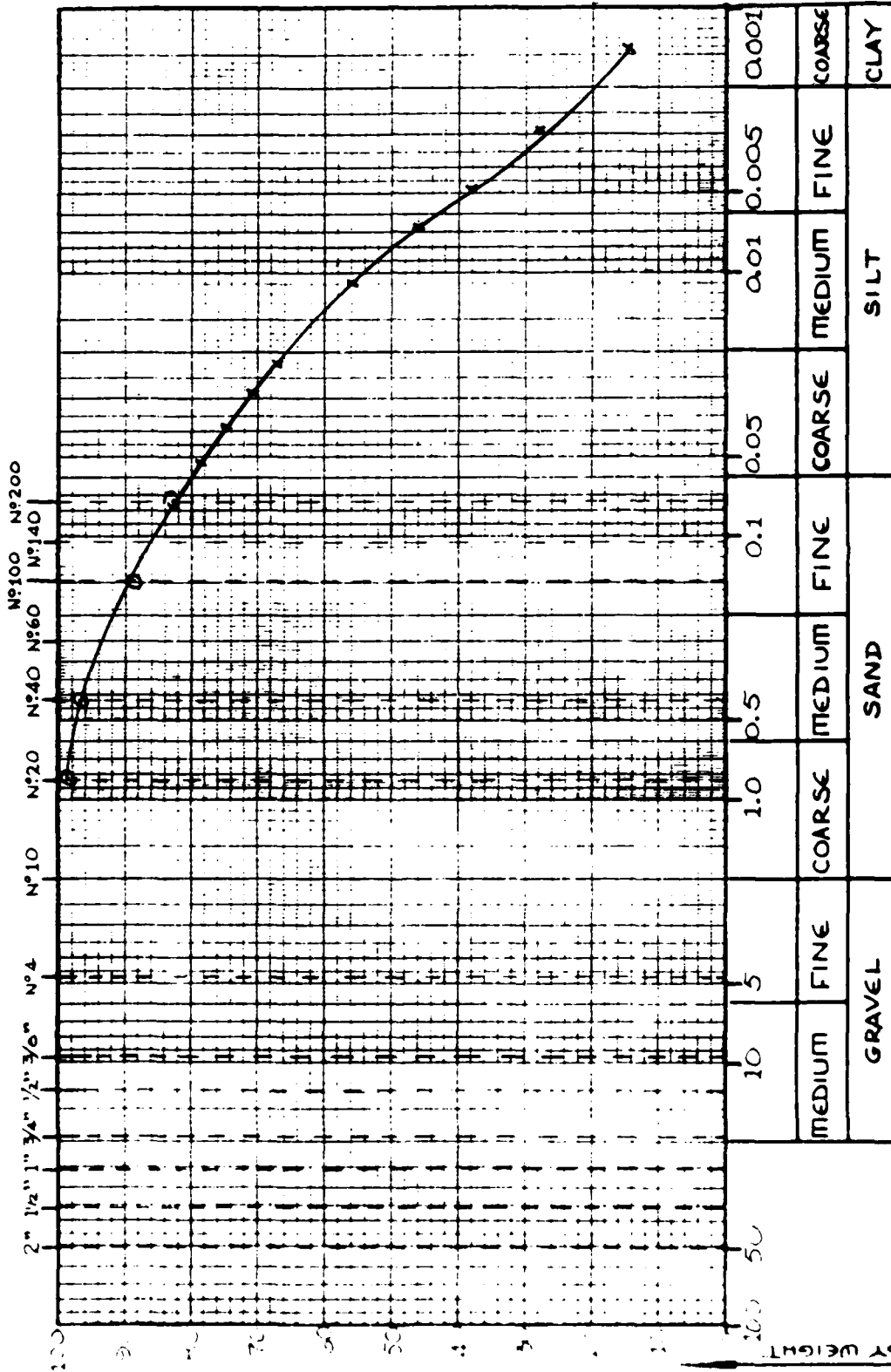
FILE NO: 1604-1
 SAMPLE NO: RB 3-1
 DATE: 90-100'
 BY:

GRAVEL	%
SAND	20 %
SILT	60 %
CLAY	20 %

DESCRIPTION:

COMMENTS

- SIEVE SIZES -



U.T. CLASSIFICATION
 - GRAIN SIZE (mm) -

RB 5-1

90-100

FILE NO: _____

SAMPLE NO: _____

DATE: _____

BY: _____

HYDROMETER ANALYSIS

200

ASTM. D422-63.

DATE IS	ACTUAL TIME	ELAPSE TIME (MIN)	R _H	TEMP. °C	R _H = R _H + (CmCd)	DIA- METER (mm)	L	K	N (%)	N ₁ (%)
		1/2	38		39.3	0.054	9.9	.0122	78.6	
		1	36		39.3	0.039	10.2	"	74.6	
		2	34		38.3	0.028	10.5	"	70.6	
		3	32.2		33.5	0.023	10.9	"	67.0	
		15	26.5	30	27.8	0.011	11.7	"	55.6	
		40	21.5	-	22.8	0.0068	12.5	"	45.6	
		65	18	29	18.9	0.0048	13.2	.0123	37.8	
	0401	245	13.5	29	13.9	0.0029	13.8	.0124	27.8	
	0930	275	11.0	29	11.0	0.0029	14.3	.0126	22.0	
	2030	1235	6.0	30	7.3	0.0014	15.2	.0122	14.6	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s : ASSUMED = _____; CALCULATED = _____MENISCUS CORRECTION, C_m : _____DISPERSING AGENT CORRECTION, C_d : _____DRY WEIGHT OF SOIL, U_s : _____

% < N°60 SIEVE: _____

 $N_1 = \left(\frac{\% < N°60}{100} \right) N = \text{_____} N$ (COMBINED ANALYSIS). $N = R \frac{G}{G-1} \times \frac{100}{U_s} = R \text{_____}$

REMARKS: _____

RB 5-1
90-100

FILE NO: _____
SAMPLE NO: _____
DATE: _____
BY: _____

- SIEVE ANALYSIS -

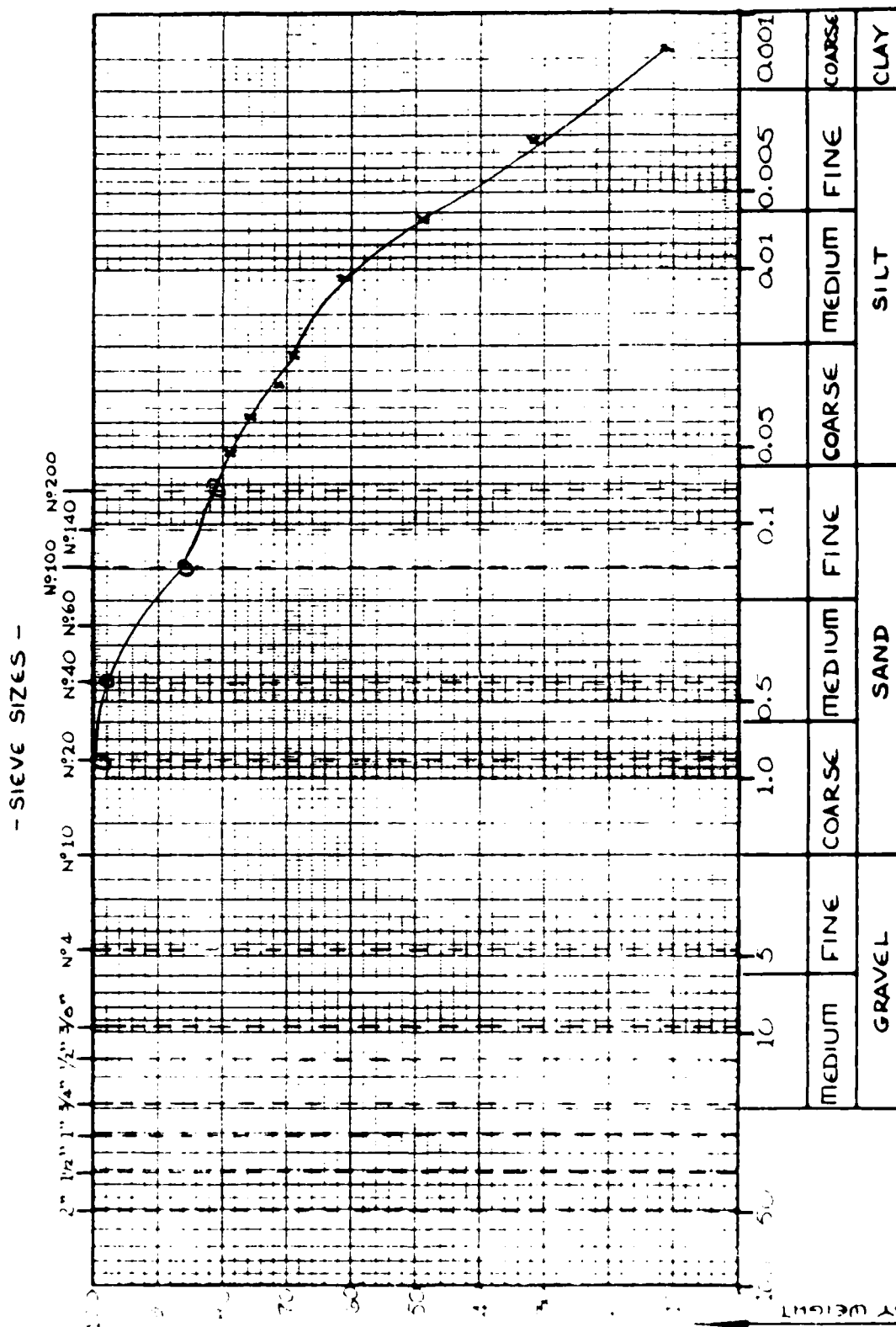
SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT	
			RETAINED	PASSING
3 IN.				
2 1/2 IN.				
2 IN.				
1 1/2 IN.				
1 IN.				
3/4 IN.				
1/2 IN.				
3/8 IN.				
NO. 4				
NO. 10	0			100.0
NO. 20	0.7	1.4		99.3
NO. 40	1.0	2.0		98.0
NO. 60				
NO. 100	3.9	7.8		92.2
NO. 140				
NO. 200	3.0	6.0		94.0
PAN	41.4	82.8		0
TOTAL	50.0	100.0		
REMARKS _____				

FILE NO: 1604-1
SAMPLE NO: RB 5-2
DATE: 115'-120'
BY: _____

GRAVEL	%
SAND	20%
SILT	60%
CLAY	20%

DESCRIPTION:

COMMENTS



M.I.T. CLASSIFICATION
-GRAIN SIZE (mm):-

RBS-V

115-120

FILE NO: _____

SAMPLE NO: _____

DATE: _____

BY: _____

HYDROMETER ANALYSIS

123y

ASTM. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R _H	TEMP. °C	R _H = R _H + (C _m C _d)	DIA- METER (mm)	L	K	N (%)	N ₁ (%)
		1/2	38		39.3	0.054	9.9	0.122	78.6	
		1	36.5		37.8	0.039	10.1	"	75.6	
		2	34		35.3	0.028	10.5	"	70.6	
		3	33		34.3	0.023	10.7	"	68.6	
		11	29	30	30.3	0.012	11.4	"	60.6	
		44	23	—	24.3	0.0065	12.5	"	48.6	
	0400	210	16	26	16.4	0.0032	13.5	0.127	32.8	
	0901	240	13.5	27	13.5	0.0030	13.8	0.126	27.0	
	2030	1200	9.0	30	10.3	0.0014	14.7	0.122	20.6	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s : ASSUMED = _____; CALCULATED = _____MENISCUS CORRECTION, C_m : _____DISPERSING AGENT CORRECTION, C_d : _____DRY WEIGHT OF SOIL, U_s : _____

% < N°60 SIEVE: _____

$$N_1 = \left(\frac{\% < N°60}{100} \right) N = \text{_____} N \text{ (COMBINED ANALYSIS).}$$

$$N = R \frac{G}{G-1} \times \frac{100}{U_s} = R \text{_____}$$

REMARKS: _____

K₃ - 2
115 - 120

FILE NO: _____
SAMPLE NO: _____
DATE: _____
BY: _____

- SIEVE ANALYSIS -

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT	
			RETAINED	PASSING
3 IN.				
2 1/2 IN.				
2 IN.				
1 1/2 IN.				
1 IN.				
3/4 IN.				
1/2 IN.				
3/8 IN.				
NO. 4				100.0
NO. 10	0.2	0.4		99.6
NO. 20	0.9	1.8		97.8
NO. 40	1.8	3.6		96.2
NO. 60				
NO. 100	4.3	8.6		91.4
NO. 140				
NO. 200	2.1	4.7		86.7
PAN	40.7	81.4		
TOTAL	50.0	100.0		
REMARKS _____				

GRAIN SIZE CHART

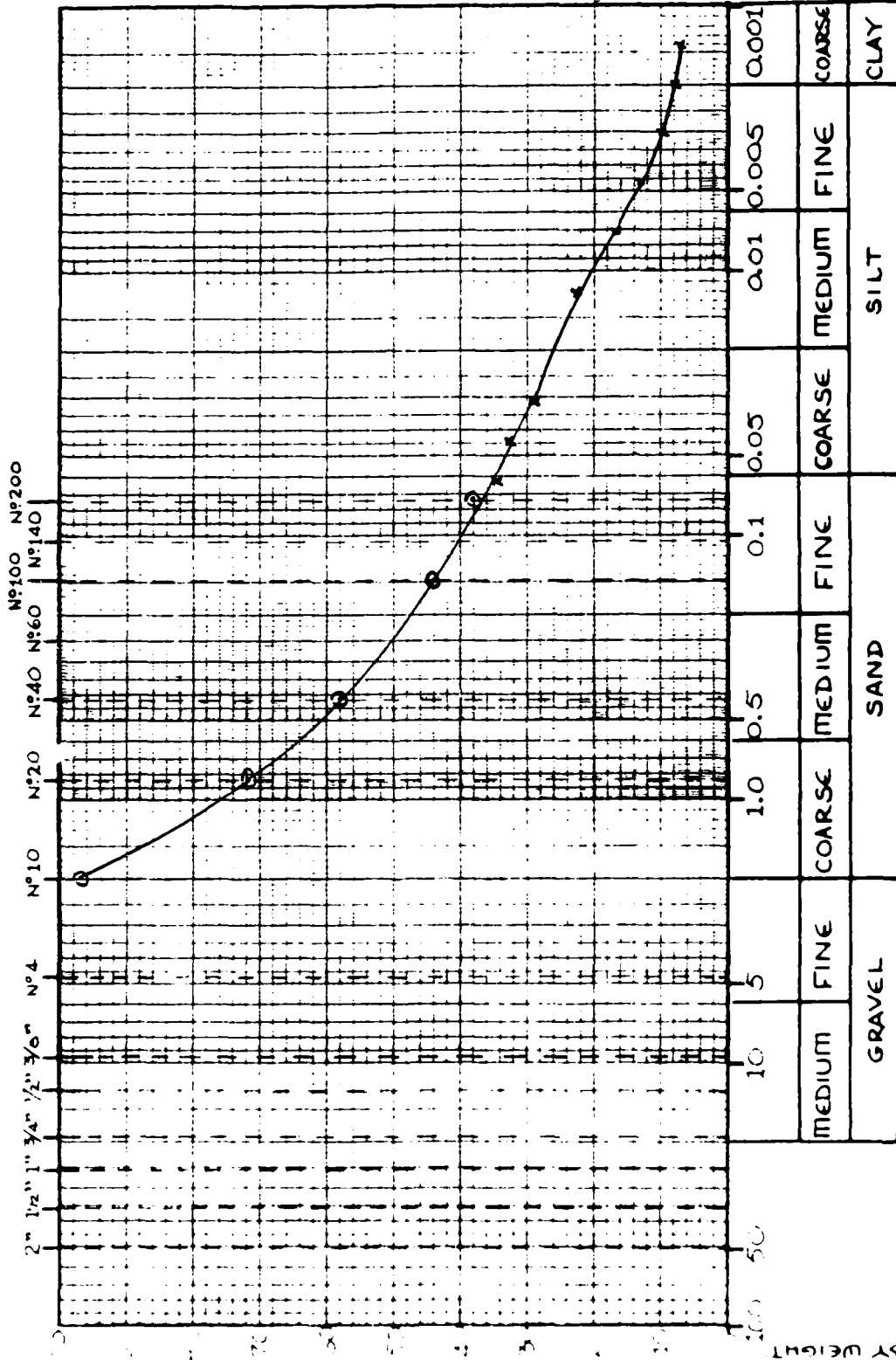
FILE NO: 1604-1
 SAMPLE NO: RB 5-3
 DATE: 135'-140'
 BY:

GRAVEL	3 %
SAND	62 %
SILT	27 %
CLAY	8 %

DESCRIPTION:

COMMENTS

- SIEVE SIZES -



M.I.T. CLASSIFICATION
 - GRAIN SIZE (mm) -

RB-5-3

135-140

FILE NO: _____

SAMPLE NO: _____

DATE: _____

BY: _____

HYDROMETER ANALYSIS

1135

ASTM D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R _H	TEMP. °C	R _H = R _H + (C _m C _d)	DIA- METER (mm)	L	K	N (%)	N ₁ (%)
		1/2	16		17.7	0.083	13.5	.0122	34.6	
		1	15		16.3	0.045	13.7	"	32.6	
		2	13		14.3	0.032	14.0	"	28.6	
		3	12		13.3	0.027	14.2	"	26.6	
		15	10	30	11.3	0.012	14.5	"	22.6	
		44	7	-	8.3	0.0071	15.0	"	16.6	
		106	5.5	29	6.4	0.0047	15.2	.0123	12.8	
	0400	265	4.5	21	4.9	0.0030	15.3	.0124	9.8	
	0930	595	4.0	27	4.0	0.0020	15.5	.0126	8.0	
	2030	1255	2.0	30	3.3	0.0016	15.8	.0122	6.6	

DESCRIPTION: _____

SPECIFIC GRAVITY, G_s : ASSUMED = _____; CALCULATED = _____MENISCUS CORRECTION, C_m : _____DISPERSING AGENT CORRECTION, C_d : _____DRY WEIGHT OF SOIL, U_s : _____

% < N°60 SIEVE: _____

$$N_1 = \left(\frac{\% < N°60}{100} \right) N = \text{_____} N \text{ (COMBINED ANALYSIS).}$$

$$N = R \frac{G}{G-1} \times \frac{100}{U_s} = R \text{ _____}$$

REMARKS: _____

RB 5-3
135-140

FILE NO: _____
SAMPLE NO: _____
DATE: _____
BY: _____

- SIEVE ANALYSIS -

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT	
			RETAINED	PASSING
3 IN.				
2 1/2 IN.				
2 IN.				
1 1/2 IN.				
1 IN.				
3/4 IN.				
1/2 IN.				
3/8 IN.				
NO. 4				100
NO. 10	1.4	2.8		97.2
NO. 20	12.6	25.2		72
NO. 40	2.1	14.2		57.8
NO. 60				
NO. 100	7.0	14.0		43.8
NO. 140				
NO. 200	3.1	6.2		22.6
PAN	18.8	37.6		0
TOTAL	50.0	100		
REMARKS _____				

GRAIN SIZE CHART

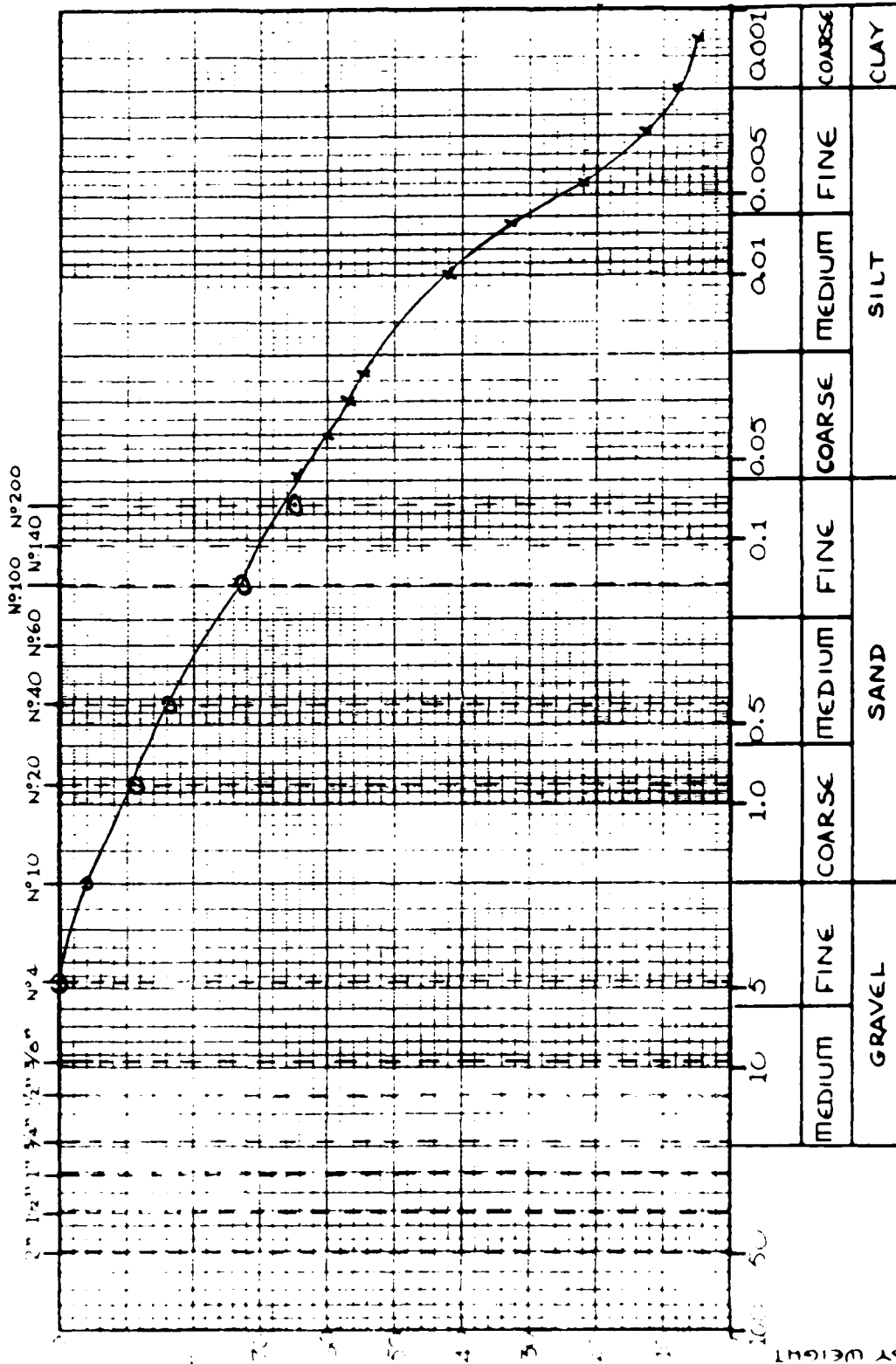
FILE NO: 1604-1
 SAMPLE NO: RB 5-4
 DATE: 195-180
 BY:

GRAVEL	4 %
SAND	32 %
SILT	56 %
CLAY	8 %

DESCRIPTION:

COMMENTS

- SIEVE SIZES -



M.I.T. CLASSIFICATION
 -GRAIN SIZE (mm)-

RB5-4

175-180

FILE NO: _____

SAMPLE NO: _____

DATE: _____

BY: _____

HYDROMETER ANALYSIS

1130

ASTM. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R _H	TEMP. °C	R _H = R _H + (CmCd)	DIA- METER (mm)	L	K	N (%)	N ₁ (%)
		1/2	31	-	32.3	0.057	11.1	.0122	64.6	
		1	29	-	30.3	0.041	11.4	"	60.3	
		2	27	-	28.3	0.030	11.7	"	56.6	
		3	26	-	27.3	0.024	11.9	"	54.6	
		19	19.5	30	20.8	0.010	12.9	"	41.6	
		48	15	29	16.3	0.0065	13.7	"	32.6	
		110	10	29	10.9	0.0045	14.5	.0123	21.8	
	0400	270	6.0	28	6.4	0.0029	15.2	.0124	12.8	
	0930	600	4.0	27	4.0	0.0020	15.5	.0126	8.0	
	2030	1260	1.0	30	2.3	0.0013	16.0	.0122	4.6	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____MENISCUS CORRECTION, C_m: _____DISPERSING AGENT CORRECTION, C_d: _____DRY WEIGHT OF SOIL, U_s: _____

% < N°60 SIEVE: _____

$$N_1 = \left(\frac{\% < N°60}{100} \right) N = \text{_____} N \text{ (COMBINED ANALYSIS).}$$

$$N = R \frac{G}{G-1} \times \frac{100}{U_s} = R \text{ _____}$$

REMARKS: _____

RB 5-4
175-180

FILE NO: _____
SAMPLE NO: _____
DATE: _____
BY: _____

- SIEVE ANALYSIS -

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT	
			RETAINED	PASSING
3 IN.				
2 1/2 IN.				
2 IN.				
1 1/2 IN.				
1 IN.				
3/4 IN.				
1/2 IN.				
3/8 IN.				
NO. 4				1000
NO. 10	2.1	4.2		958
NO. 20	3.4	6.8		896
NO. 40	2.4	4.8		742
NO. 60				
NO. 100	5.7	11.4		726
NO. 140				
NO. 200	3.8	7.6		652
PAN	226	65.2		0
TOTAL	50	1000		
REMARKS _____				

GRAIN SIZE CHART

FILE NO: 1604-1
 SAMPLE NO: RB 5-5
 DATE: 1951-200
 BY:

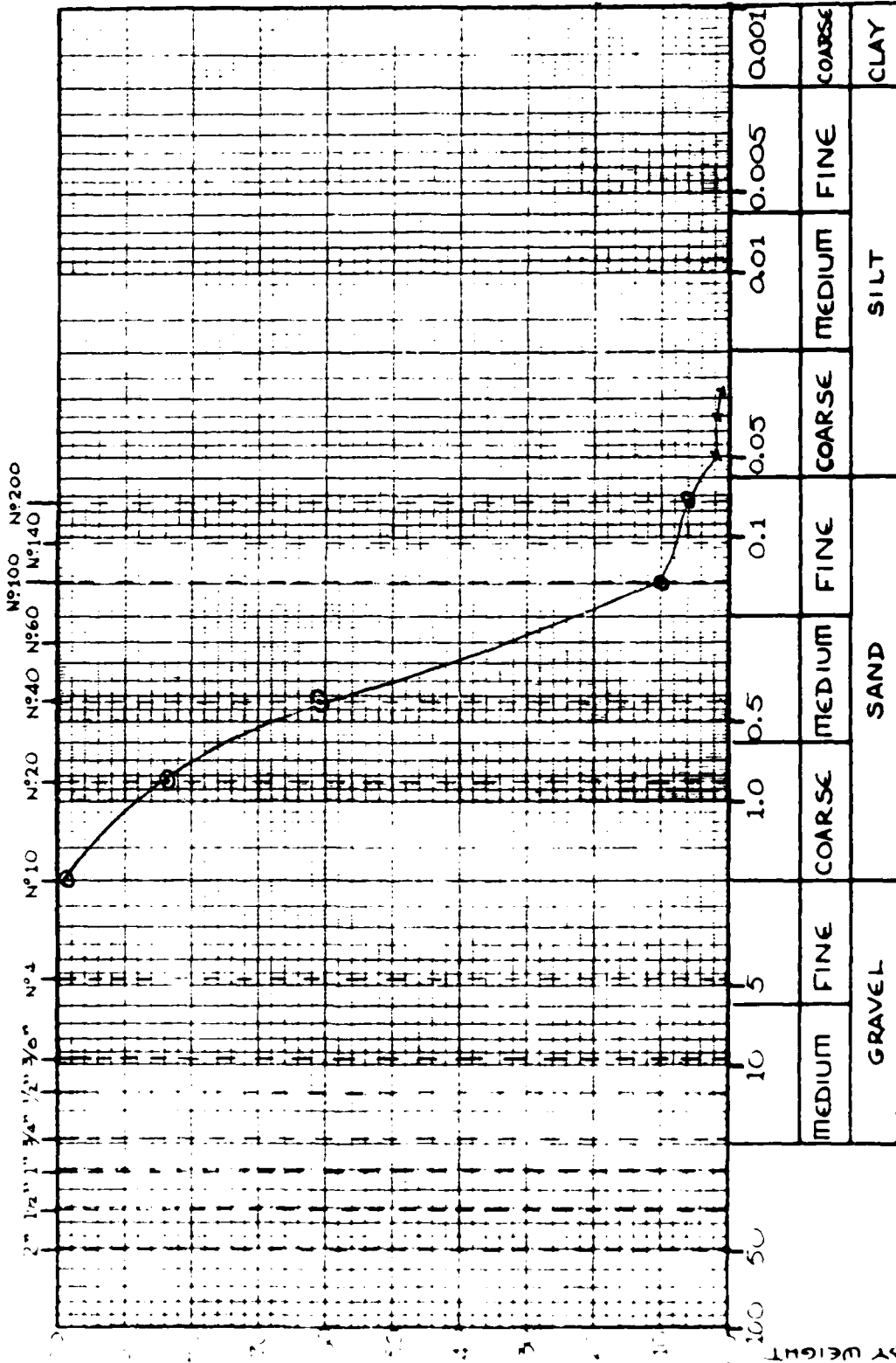
GRAVEL	%
SAND	96%
SILT	4%
CLAY	%

DESCRIPTION:

COMMENTS

Whole Sample 50 gm

- SIEVE SIZES -



M.I.T. CLASSIFICATION
 - GRAIN SIZE (mm) -

195-200

FILE NO:

SAMPLE NO:

DATE :

BY:

HYDROMETER ANALYSIS

0135

A.S.T.M. D 422-63.

[illegible]

DESCRIPTION:

SPECIFIC GRAVITY; G_s : ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, C_m : _____

DISPERSING AGENT CORRECTION, Cd: _____

DRY WEIGHT OF SOIL, U_9 : _____.

% < NO 60 SIEVE : _____.

$$N_1 = \left(\frac{\% < N^{\circ} 60}{100} \right) N = \text{_____} N \text{ (COMBINED ANALYSIS).}$$
$$N = R \frac{G}{G-1} \times \frac{100}{U_S} = R \underline{\hspace{2cm}}.$$

REMARKS: whole sample 50 gm

RB 5-5

195-200

FILE NO: _____

SAMPLE NO: _____

DATE: _____

BY: _____

- SIEVE ANALYSIS -

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT	
			RETAINED	PASSING
3 IN.				
2 1/2 IN.				
2 IN.				
1 1/2 IN.				
1 IN.				
3/4 IN.				
1/2 IN.				
3/8 IN.				
NO. 4				100
NO. 10	2.7	1.4		98.6
NO. 20	7.4	14.8		83.8
NO. 40	11.2	22.4		61.4
NO. 60				
NO. 100	25.5	51.0		10.4
NO. 140				
NO. 200	2.3	4.6		5.8
PAN	2.9	5.7		0
TOTAL	50	100		
REMARKS _____				

GRAIN SIZE CHART

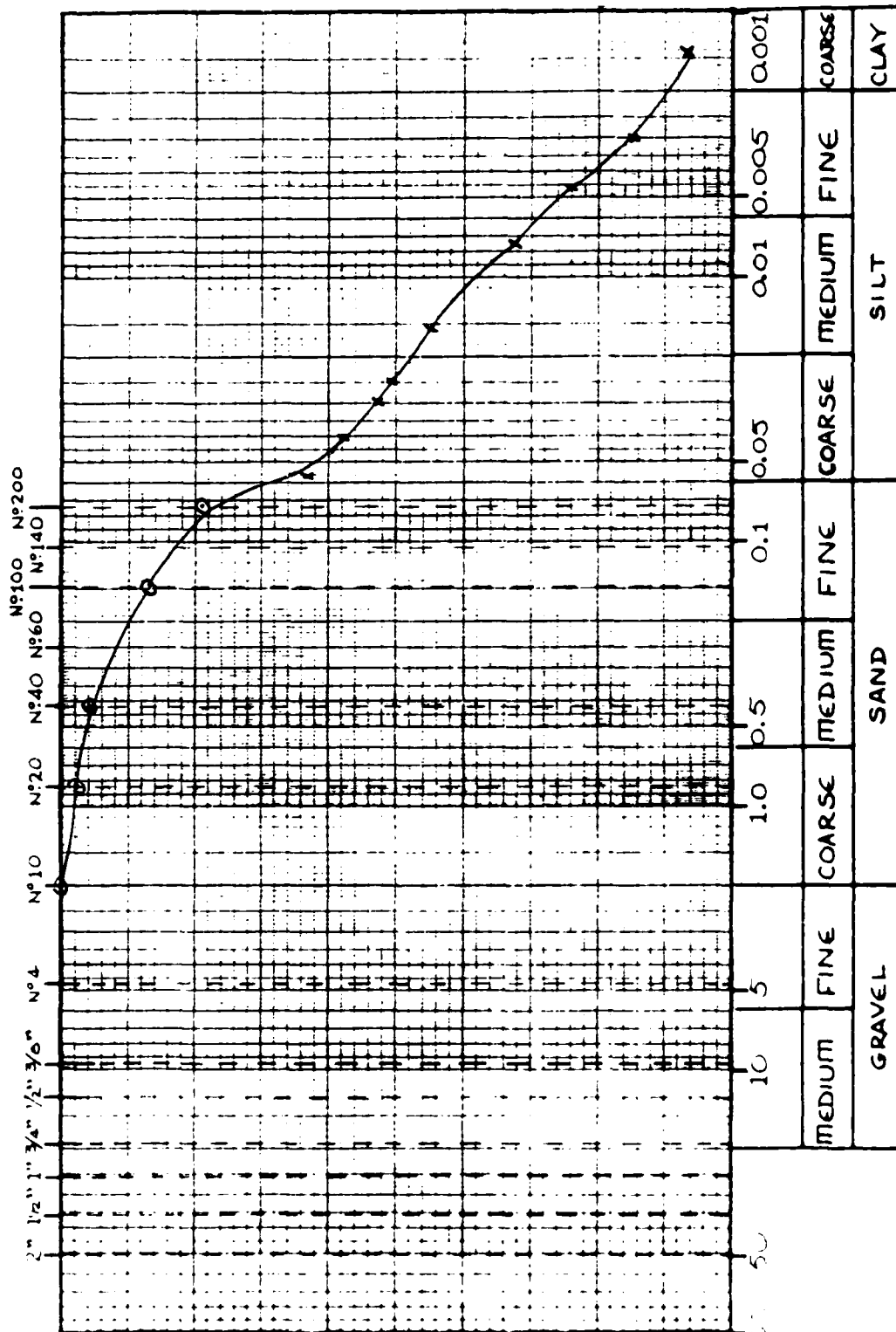
FILE NO: 1604-1
 SAMPLE NO: RB 6-1
 DATE: 90'-100'
 BY:

GRAVEL	%
SAND	30%
SILT	60%
CLAY	10%

DESCRIPTION:

COMMENTS

- SIEVE SIZES -



M.I.T. CLASSIFICATION
 - GRAIN SIZE (mm) -

RB-6-1

90-100

FILE NO: _____
 SAMPLE NO: _____
 DATE: _____
 BY: _____

HYDROMETER ANALYSIS

1145

ASTM. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R _H	TEMP. °C	R _H = R _H + (C _m C _d)	DIA- METER (mm)	L	K	N (%)	N' (%)
		1/2	30		31.3	0.058	11.2	.0122	62.6	
		1	27.5		28.8	0.041	11.5	"	57.6	
		2	25		26.3	0.030	12.0	"	52.6	
		3	24		25.3	0.025	12.2	"	50.6	
		7	21.0	30	22.3	0.016	12.7	"	44.6	
		36	15	-	16.3	0.0075	13.7	"	32.6	
		98	11.0	24	11.9	0.0047	14.3	.0123	23.6	
	0400	255	7.0	28	7.4	0.0030	15.0	.0124	14.6	
	0930	285	5.5	27	5.5	0.0029	15.2	.0126	11.0	
	2030	1245	2.0	30	3.3	0.0014	15.8	.0122	6.6	

DESCRIPTION: _____

SPECIFIC GRAVITY, G_s : ASSUMED = _____; CALCULATED = _____MENISCUS CORRECTION, C_m : _____DISPERSING AGENT CORRECTION, C_d : _____DRY WEIGHT OF SOIL, U_s : _____

% < N°60 SIEVE: _____

$$N_1 = \left(\frac{\% < N°60}{100} \right) N = \text{_____} N \text{ (COMBINED ANALYSIS).}$$

$$N = R \frac{G}{G-1} \times \frac{100}{U_s} = R \text{ _____}$$

REMARKS: _____

RB 6-1
90 - 100

FILE NO: _____
SAMPLE NO: _____
DATE: _____
BY: _____

- SIEVE ANALYSIS -

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT	
			RETAINED	PASSING
3 IN.				
2 1/2 IN.				
2 IN.				
1 1/2 IN.				
1 IN.				
3/4 IN.				
1/2 IN.				
3/8 IN.				
NO. 4				
NO. 10	0			100.0
NO. 20	1.3	2.4		97.6
NO. 40	1.0	2.0		95.6
NO. 60				
NO. 100	4.5	9.0		96.6
NO. 140				
NO. 200	3.9	2.8		97.1
PAN	39.4	78.8		0
TOTAL	50.0	100.0		
REMARKS _____				

GRAIN SIZE CHART

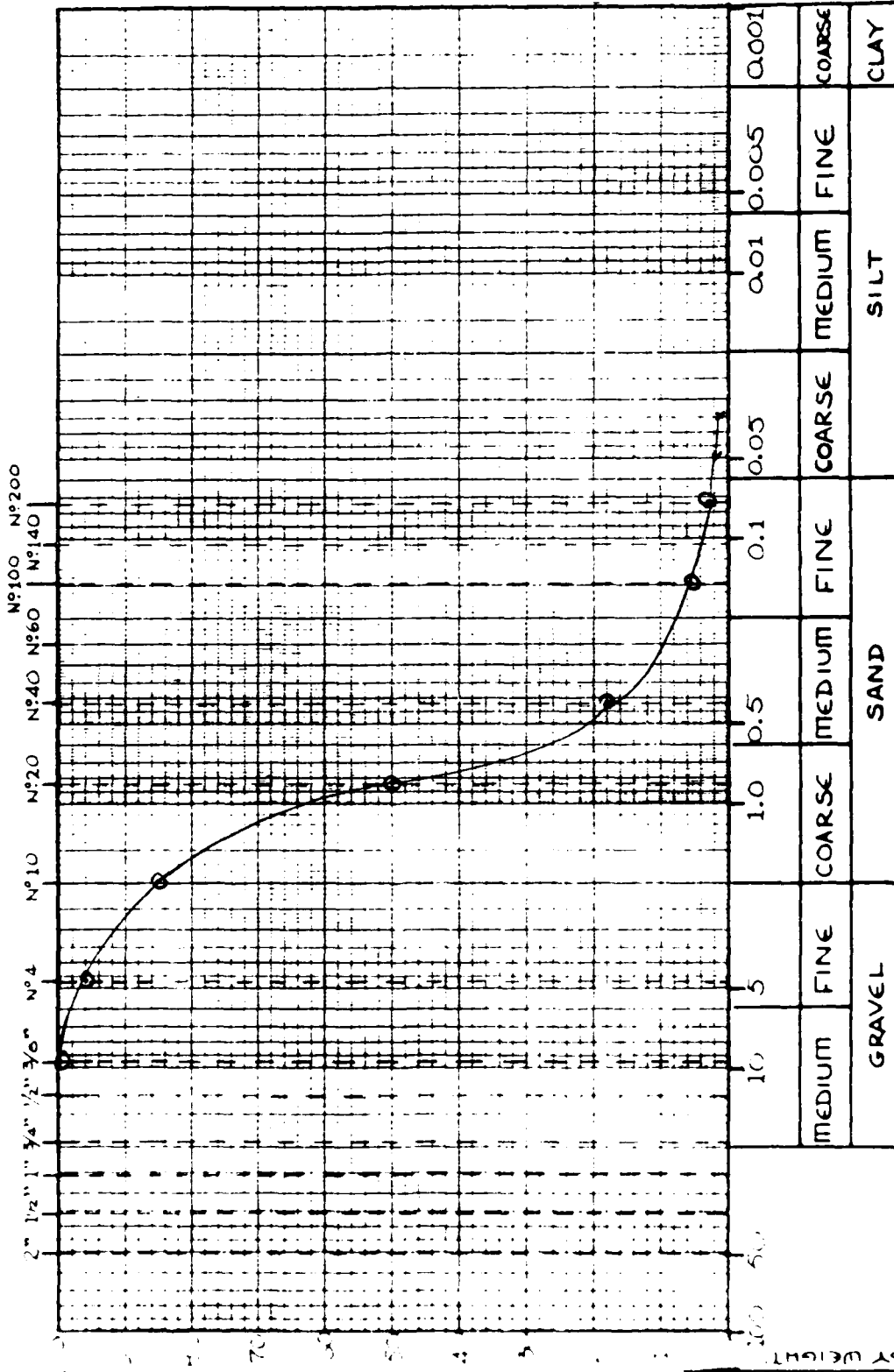
FILE NO: 1604-1
 SAMPLE NO: RB 6-2
 DATE: 135-140
 BY:

GRAVEL	14 %
SAND	84 %
SILT	2 %
CLAY	0 %

DESCRIPTION:

COMMENTS

- SIEVE SIZES -



M.I.T. CLASSIFICATION
 - GRAIN SIZE (mm) -

135-140

FILE NO:

SAMPLE NO:

DATE:

BY:

HYDROMETER ANALYSIS

1225

A.S.T.M. D 422-63.

[illegible]

DESCRIPTION: _____

SPECIFIC GRAVITY ; G_s : ASSUMED = _____ ; CALCULATED = _____

MENISCUS CORRECTION, C_m : _____

DISPERSING AGENT CORRECTION, C_d : _____

DRY WEIGHT OF SOIL, W_s : _____.

% < N° 60 SIEVE : _____

$$N_1 = \left(\frac{\% < N^{\circ} 60}{100} \right) N = \text{_____} N \text{ (COMBINED ANALYSIS).}$$
$$N = R \frac{G}{G-1} \times \frac{100}{U_s} = R \underline{\hspace{2cm}}.$$

REMARKS: _____

RB 6-2
135-140

FILE NO: _____
SAMPLE NO: _____
DATE: _____
BY: _____

- SIEVE ANALYSIS -

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT	
			RETAINED	PASSING
3 IN.				
2 1/2 IN.				
2 IN.				
1 1/2 IN.				
1 IN.				
3/4 IN.				
1/2 IN.				
3/8 IN.				100.0
NO. 4	13.4	3.9		96.1
NO. 10	38.5	11.3		84.8
NO. 20	26.4 117.9	34.5		50.3
NO. 40	19.3 111.6	32.7		17.6
NO. 60				
NO. 100	7.5 43.4	12.7		4.9
NO. 140				
NO. 200	0.9 5.2	1.5		3.4
PAN	1.9 11.0	3.4		-
TOTAL	340.9	100.0		
REMARKS _____				

- #10 = 289.0 gm Dry

factor = 5.78

GRAIN SIZE CHART

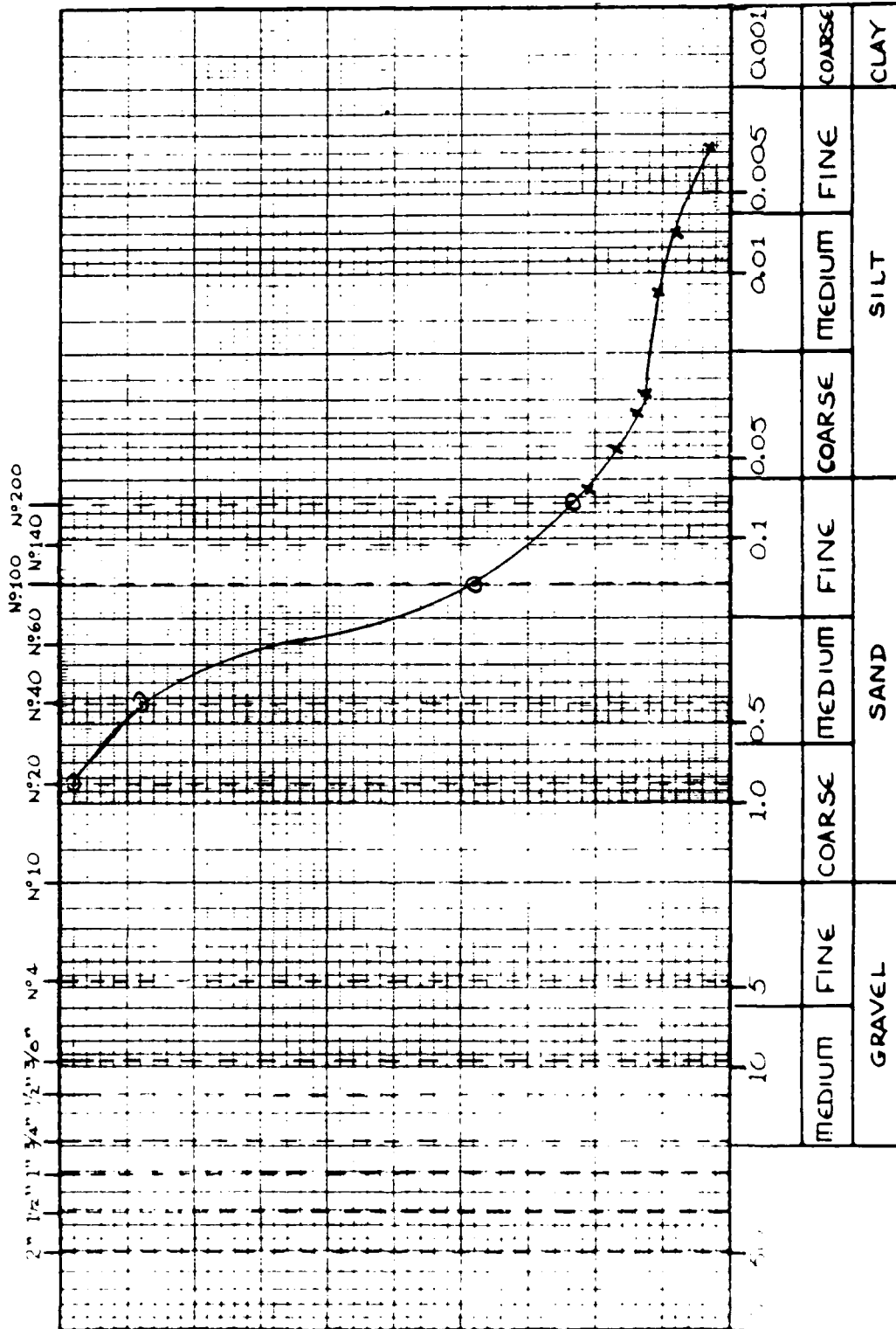
FILE NO: 1604-1
 SAMPLE NO: RB 6-3
 DATE: 170'-180'
 BY:

GRAVEL	%
SAND	80%
SILT	20%
CLAY	%

DESCRIPTION:

COMMENTS

- SIEVE SIZES -



M.I.T. CLASSIFICATION
 - GRAIN SIZE (mm) -

170-180

BY:

HYDROMETER ANALYSIS

1230

A.S.T.M. D 422-63.

[illegible]

REMARKS: _____

RB 6-3
170 - 180

FILE NO: _____
SAMPLE NO: _____
DATE: _____
BY: _____

- SIEVE ANALYSIS -

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT	
			RETAINED	PASSING
3 IN.				
2 1/2 IN.				
2 IN.				
1 1/2 IN.				
1 IN.				
3/4 IN.				
1/2 IN.				
3/8 IN.				
NO. 4				
NO. 10	0			100
NO. 20	1.2	2.4		97.6
NO. 40	4.8	9.6		88.0
NO. 60				
NO. 100	25.2	50.4		37.6
NO. 140				
NO. 200	6.7	13.4		24.2
PAN	12.1	24.2		
TOTAL	50.0			
REMARKS _____				

GRAIN SIZE CHART

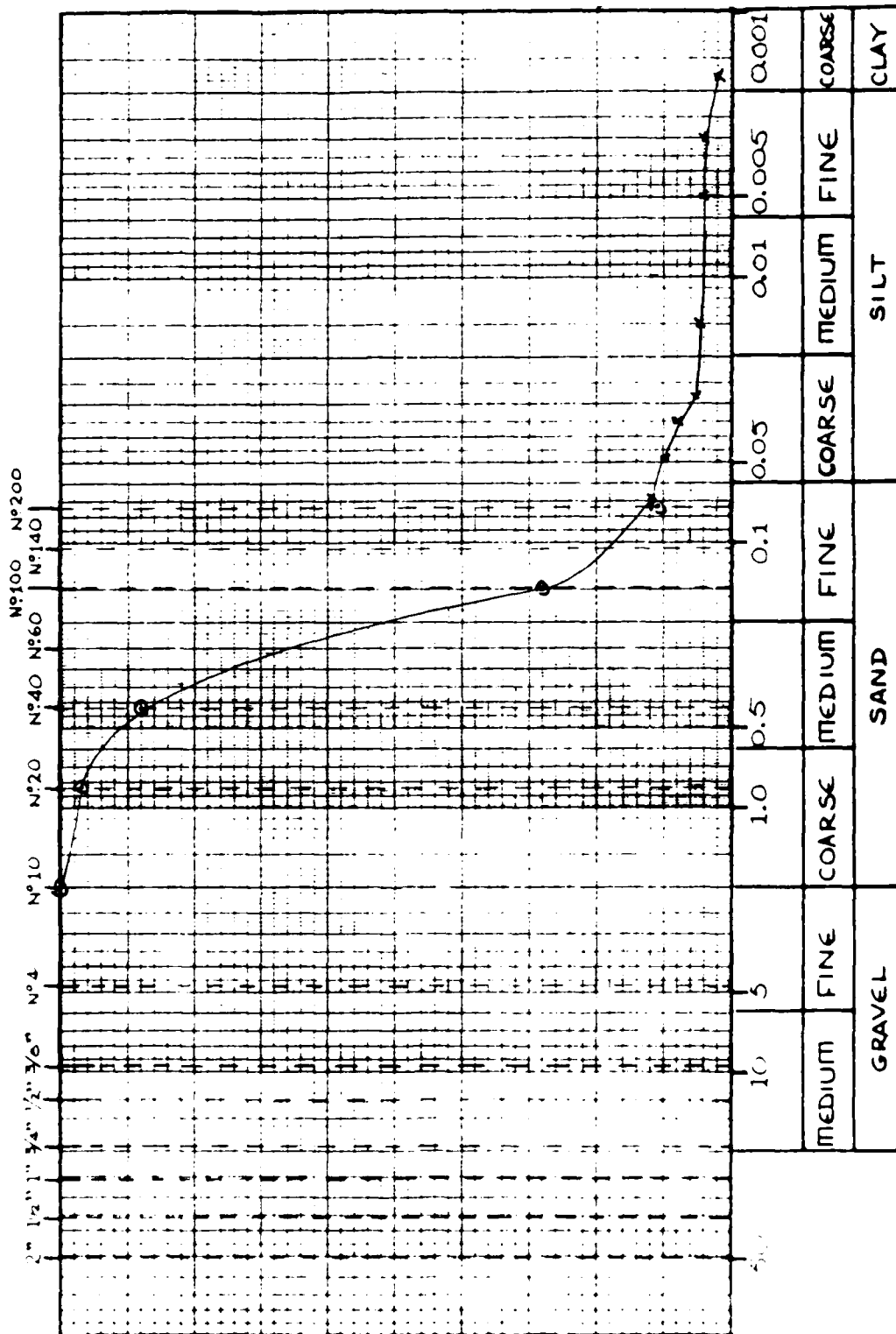
FILE NO: 1604-1
 SAMPLE NO: RB 6-4
 DATE: 190'-200'
 BY:

GRAVEL	%
SAND	24%
SILT	9%
CLAY	2%

DESCRIPTION:

COMMENTS

- SIEVE SIZES -



M.I.T. CLASSIFICATION
 -GRAIN SIZE (mm)-

% FINER BY WEIGHT

190-200

FILE NO:

SAMPLE NO:

DATE :

BY:

HYDROMETER ANALYSIS

1300

A.S.T.M. D 422-63.

[illegible]

DESCRIPTION:

SPECIFIC GRAVITY ; G_s : ASSUMED = _____ ; CALCULATED = _____

MENISCUS CORRECTION, C_m : _____

DISPERSING AGENT CORRECTION, Cd: _____

DRY WEIGHT OF SOIL, W_s : _____.

% < NO 60 SIEVE : _____.

$$N_1 = \left(\frac{\% < N\#60}{100} \right) N = \text{_____} N \text{ (COMBINED ANALYSIS).}$$
$$N = R \frac{G}{G-1} \times \frac{100}{U_S} = R \underline{\hspace{2cm}}.$$

REMARKS:

RB 6-4
190 - 203

FILE NO: _____
SAMPLE NO: _____
DATE: _____
BY: _____

- SIEVE ANALYSIS -

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT	
			RETAINED	PASSING
3 IN.				
2 1/2 IN.				
2 IN.				
1 1/2 IN.				
1 IN.				
3/4 IN.				
1/2 IN.				
3/8 IN.				
NO. 4				
NO. 10	0			1000
NO. 20	1.4	2.8		99.2
NO. 40	4.8	9.6		97.6
NO. 60				
NO. 100	30.0	60.0		27.6
NO. 140				
NO. 200	8.3	16.6		11.0
PAN	5.5	11.0		0
TOTAL	50.0	100.0		
REMARKS _____				

GRAIN SIZE CHART

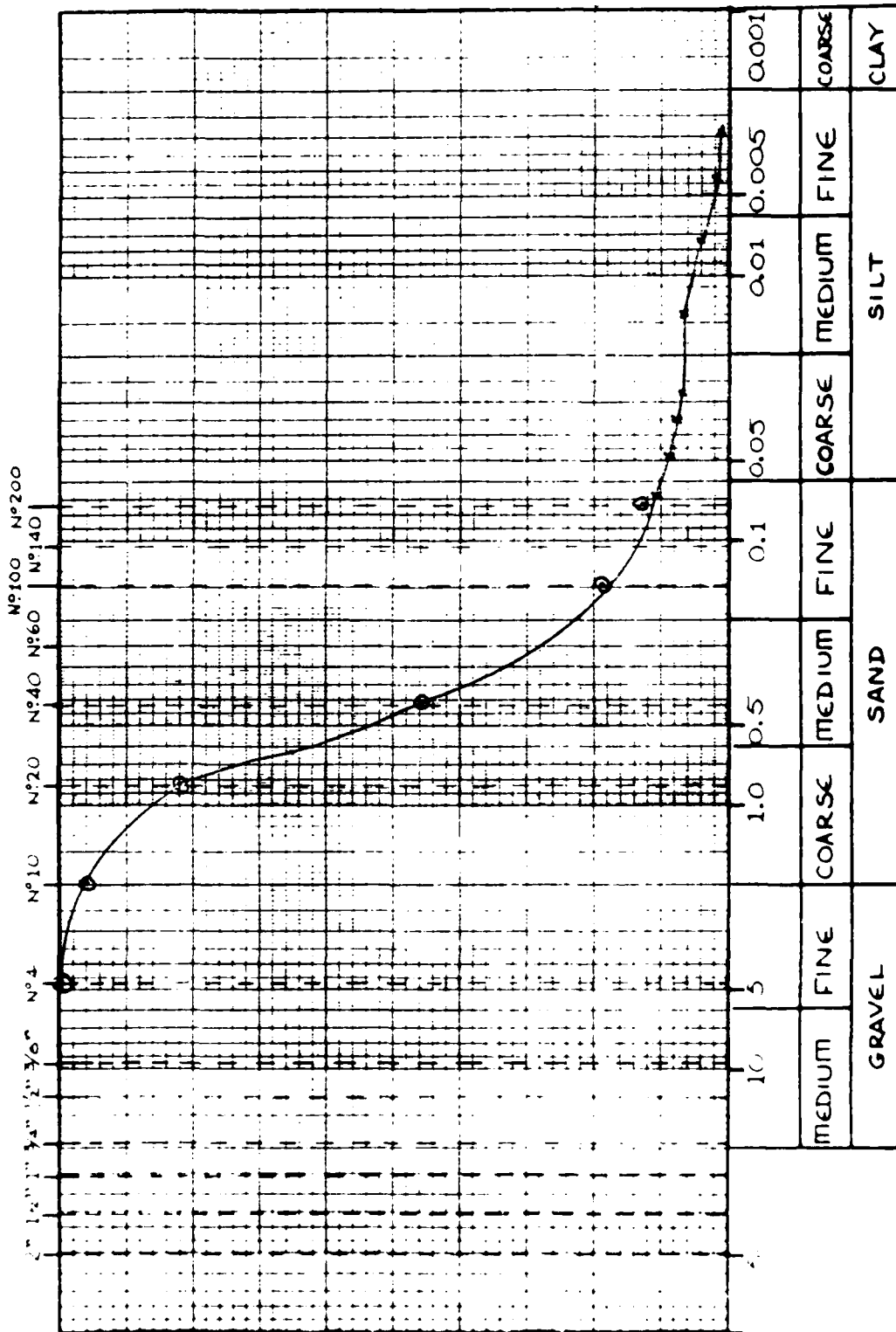
FILE NO: 1604-1
 SAMPLE NO: RA 9-2
 DATE: 135-140
 BY:

GRAVEL	4%
SAND	96%
SILT	10%
CLAY	9%

DESCRIPTION:

COMMENTS:

- SIEVE SIZES -



M.I.T. CLASSIFICATION
 - GRAIN SIZE (mm) -

135-140

BY:

1.220

A.S.T.M. D 422-63.

REMARKS: _____

7-2
135-140

FILE NO: _____
SAMPLE NO: _____
DATE: _____
BY: _____

- SIEVE ANALYSIS -

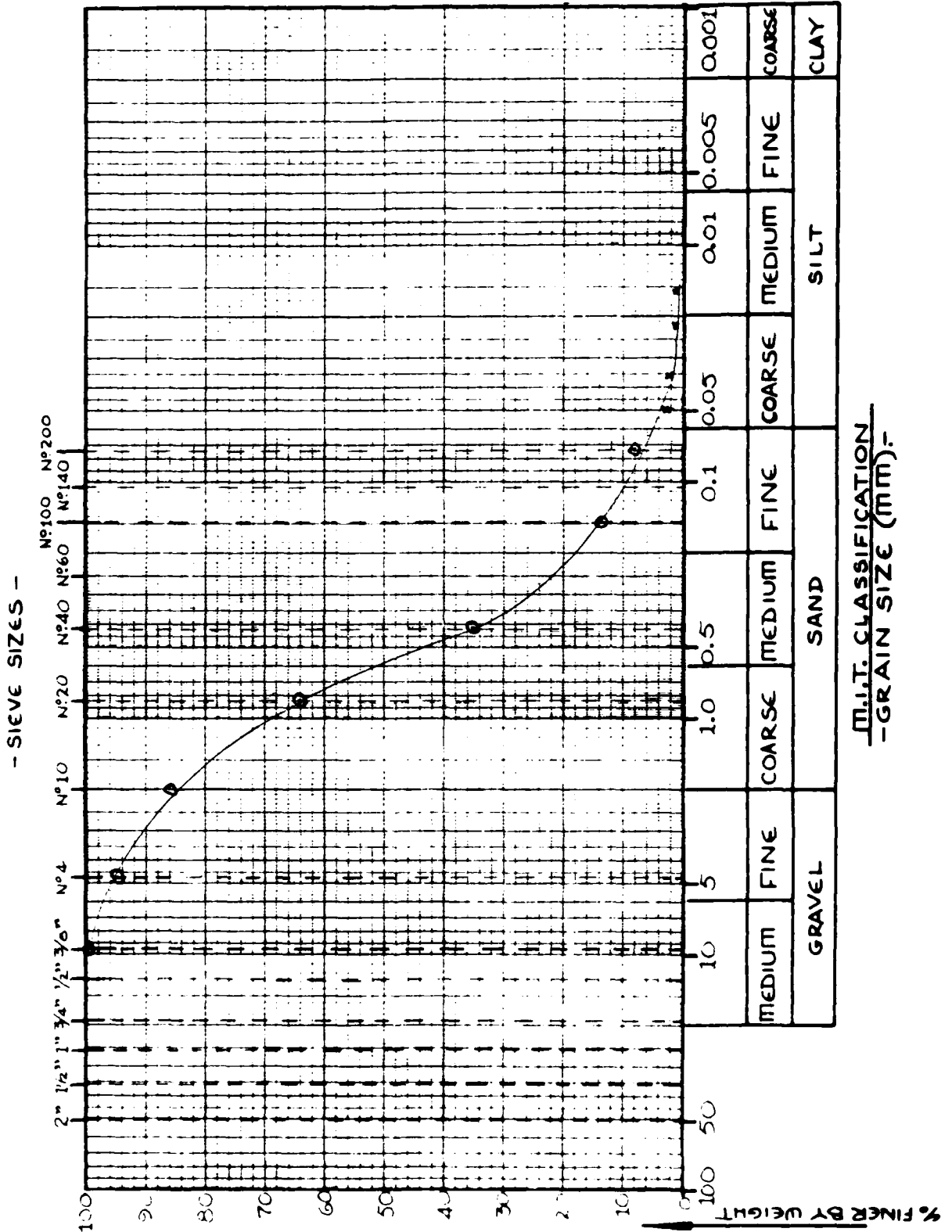
SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT	
			RETAINED	PASSING
3 IN.				
2 1/2 IN.				
2 IN.				
1 1/2 IN.				
1 IN.				
3/4 IN.				
1/2 IN.				
3/8 IN.				
NO. 4				100.0
NO. 10	1.8	3.6		96.4
NO. 20	7.2	10.0		90.0
NO. 40	18.0	36.0		64.0
NO. 60				
NO. 100	13.8	27.6		72.4
NO. 140				
NO. 200	2.9	5.8		94.2
PAN	6.3	12.6		
TOTAL	50.0	100.0		
REMARKS _____				

FILE NO: 1604-1
SAMPLE NO: RB 7-3
DATE: 155'-160'
BY: _____

GRAVEL	16	%
SAND	74	%
SILT	5	%
CLAY		%

DESCRIPTION:

COMMENTS



155-160

FILE NO:

SAMPLE NO:

DATE :

BY:

HYDROMETER ANALYSIS

120

ASTM. D 422-63.

[illegible]

DESCRIPTION:

SPECIFIC GRAVITY ; G_s : ASSUMED = _____ ; CALCULATED = _____

MENISCUS CORRECTION, C_m : _____

DISPERSING AGENT CORRECTION, C_d : _____

DRY WEIGHT OF SOIL, W_s : _____.

% < N° 60 sieve : _____.

$$N_1 = \left(\frac{\% < N:60}{100} \right) N = \underline{859} N \text{ (COMBINED ANALYSIS).}$$
$$N = R \frac{G}{G-1} \times \frac{100}{(1)5} = R \underline{\hspace{2cm}}.$$

REMARKS:

R B 7 3

155-160

FILE NO: _____
SAMPLE NO: _____
DATE: _____
BY: _____

- SIEVE ANALYSIS -

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT	
			RETAINED	PASSING
3 IN.				
2 1/2 IN.				
2 IN.				
1 1/2 IN.				
1 IN.				
3/4 IN.				
1/2 IN.				
3/8 IN.				100.0
NO. 4	3.3	5.0		95.0
NO. 10	12.0	7.1		87.9
NO. 20	12.4 : 40.0	21.5		66.4
NO. 40	19.2 : 55.0	29.5		36.9
NO. 60				
NO. 100	15.5 : 40.0	21.4		13.5
NO. 140				
NO. 200	1 : 9.9	5.3		8.2
PAN	4.3 : 15.3	8.2		0
TOTAL	50 : 156.3	100.0		
REMARKS 156.3				

- 156.3

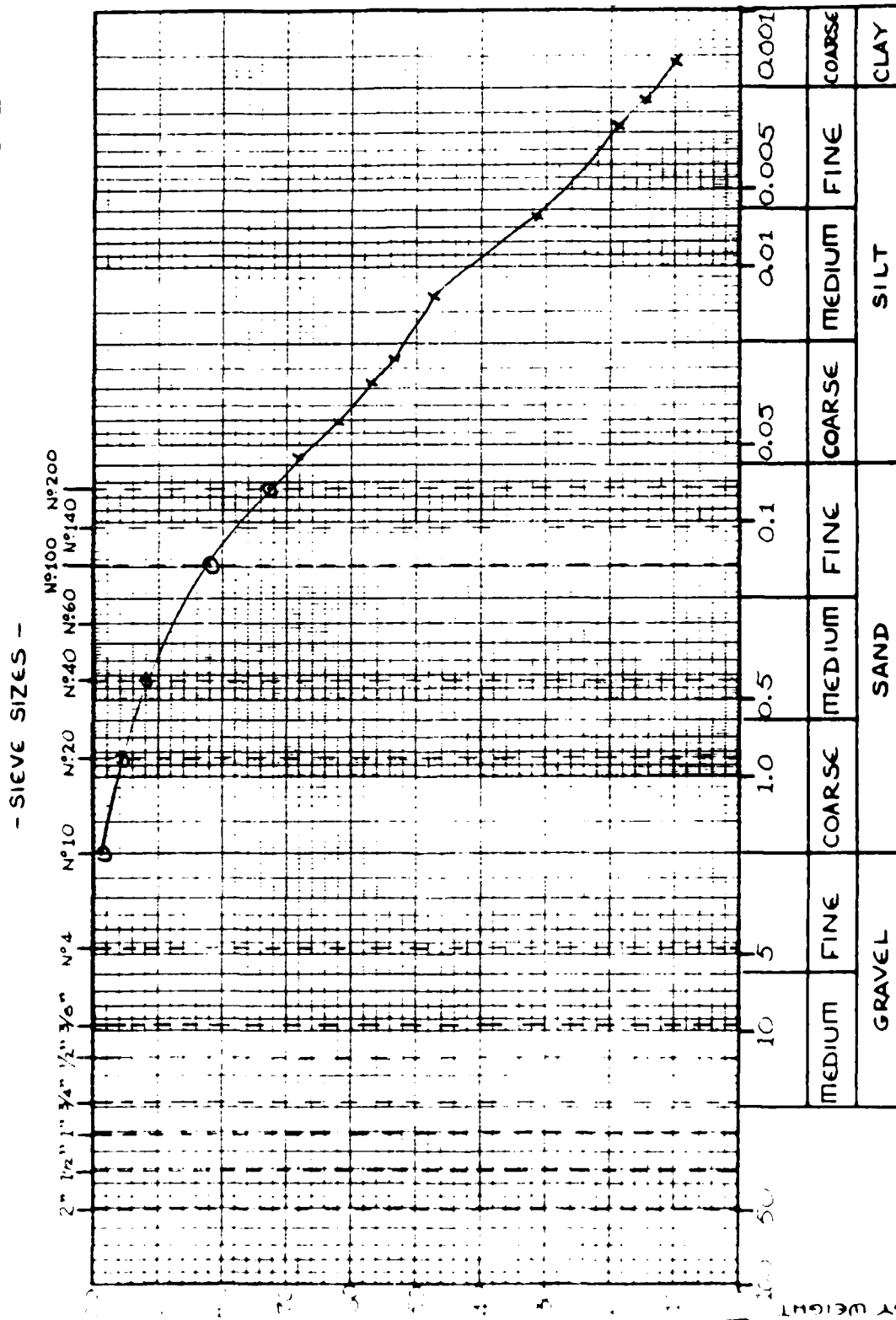
- 156.3 / 100 = 1.563

FILE NO: 1604-1
SAMPLE NO: RB 8
DATE: 100'-120'
BY: _____

GRAVEL	%
SAND	32%
SILT	55%
CLAY	13%

DESCRIPTION:

COMMENTS



M.I.T. CLASSIFICATION
-GRAIN SIZE (mm)-

RB 8
100-120

SAMPLE NO:

BY:

HYDROMETER ANALYSIS

A.S.T.M. D 422-63.

[illegible]

DESCRIPTION:

SPECIFIC GRAVITY ; G_s : ASSUMED = _____ ; CALCULATED = _____

MENISCUS CORRECTION, C_m : _____

DISPERSING AGENT CORRECTION, C_d : _____

DRY WEIGHT OF SOIL, U_g : _____

% < NO. 60 SIEVE : _____

$$N_1 = \left(\frac{\% < N:60}{100} \right) N = \underline{\hspace{2cm}} N \text{ (COMBINED ANALYSIS).}$$
$$N = R \frac{G}{G-1} \times \frac{100}{U_s} = R \underline{\hspace{2cm}}.$$

REMARKS: _____

RB-8
100 - 120

FILE NO: _____
SAMPLE NO: _____
DATE: _____
BY: _____

- SIEVE ANALYSIS -

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT	
			RETAINED	PASSING
3 IN.				
2 1/2 IN.				
2 IN.				
1 1/2 IN.				
1 IN.				
3/4 IN.				
1/2 IN.				
3/8 IN.				
NO. 4				100.0
NO. 10	0.7	1.4		98.6
NO. 20	1.5	3.0		95.6
NO. 40	1.8	3.6		92.0
NO. 60				
NO. 100	5.1	10.2		81.8
NO. 140				
NO. 200	4.5	9.0		72.8
PAN	36.4	72.8		
TOTAL	50.0	100.0		
REMARKS _____				

GRAIN SIZE CHART

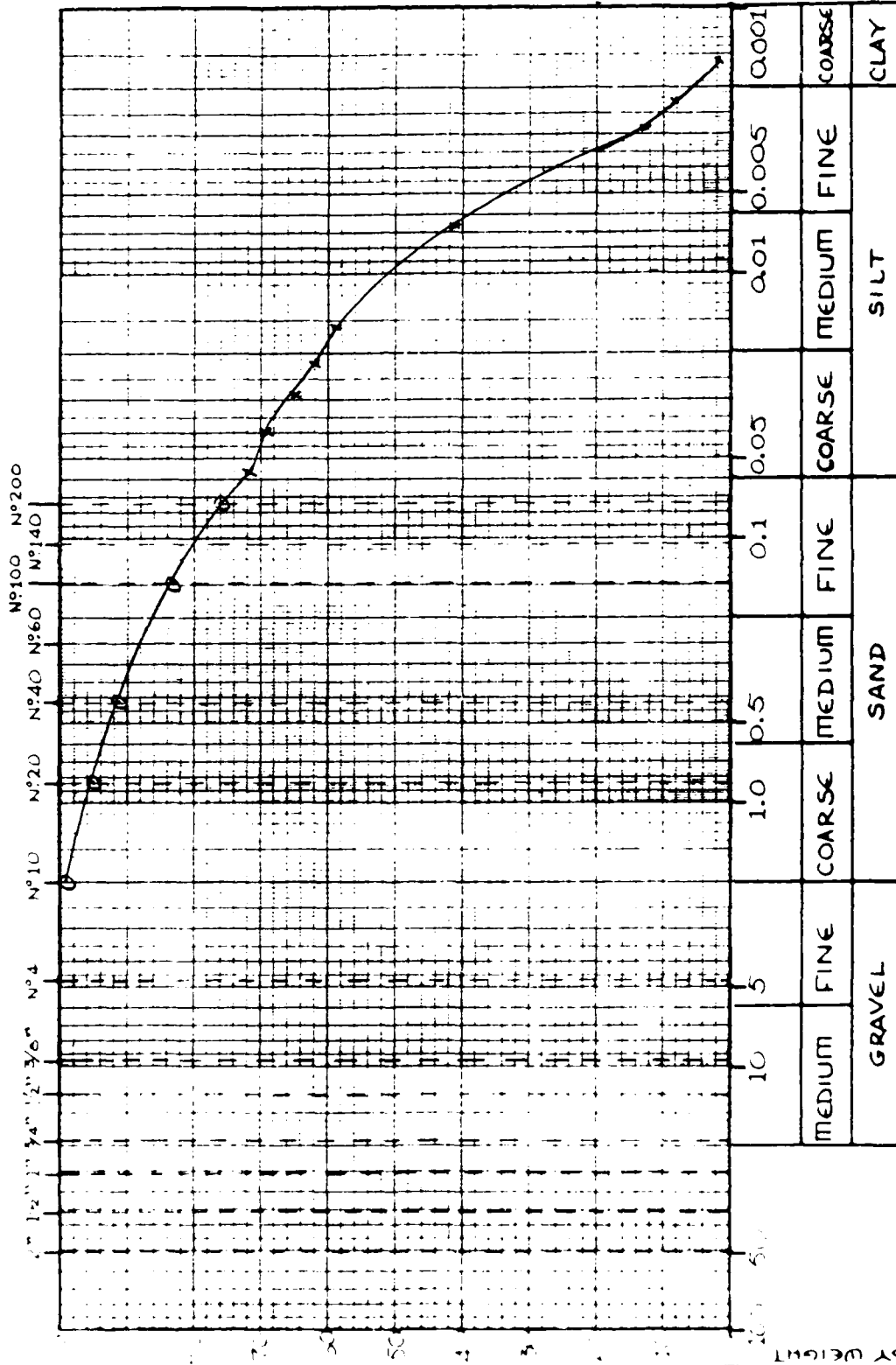
FILE NO: 1604-1
 SAMPLE NO: RB8
 DATE: 135-140
 BY:

GRAVEL	%
SAND	28
SILT	66
CLAY	6

DESCRIPTION:

COMMENTS:

- SIEVE SIZES -



M.I.T. CLASSIFICATION
 - GRAIN SIZE (mm) -

% FINER BY WEIGHT

RB 8

135-140

FILE NO: _____

SAMPLE NO: _____

DATE: _____

BY: _____

HYDROMETER ANALYSIS

1225

ASTM. D 422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R _H	TEMP. °C	R _H = R _H + (CmCd)	DIA- METER (mm)	L	K	N (%)	N ₁ (%)
		1/2	38		35.9	0.056	10.4	.0123	71.8	
		1	33.5		34.4	0.040	10.5	"	68.8	
		2	31.5		32.4	0.029	10.9	"	64.8	
		3	30	29	30.9	0.024	11.2	"	61.8	
		7	28.5	—	29.4	0.016	11.4	"	58.8	
	1710	45	20	26	20.4	0.0066	12.9	.0124	40.8	
		285	7.0	26	6.6	0.0029	15.0	.0127	13.2	
	0800	45	4.5	26	4.1	0.0023	15.3	"	8.2	
		945	1.0	27	1.0	0.0016	16.0	.0126	2.0	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____MENISCUS CORRECTION, C_m: _____DISPERSING AGENT CORRECTION, C_d: _____DRY WEIGHT OF SOIL, U_s: _____

% < N°60 SIEVE: _____

$$N_1 = \left(\frac{\% < N°60}{100} \right) N = \text{_____} N \text{ (COMBINED ANALYSIS)}$$

$$N = R \frac{G}{G-1} \times \frac{100}{U_s} = R \text{ _____}$$

REMARKS: _____

RB-2
135-140

FILE NO: _____
SAMPLE NO: _____
DATE: _____
BY: _____

- SIEVE ANALYSIS -

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT	
			RETAINED	PASSING
3 IN.				
2 1/2 IN.				
2 IN.				
1 1/2 IN.				
1 IN.				
3/4 IN.				
1/2 IN.				
3/8 IN.				
NO. 4				100.0
NO. 10	0.4	0.8		99.2
NO. 20	2.1	2.9		97.0
NO. 40	2.1	4.9		95.0
NO. 60				
NO. 100	4.1	8.9		91.0
NO. 140				
NO. 200	3.3	12.2		87.8
PAN	38.0	76.0		0
TOTAL	50.0	100.0		
REMARKS _____				

GRAIN SIZE CHART

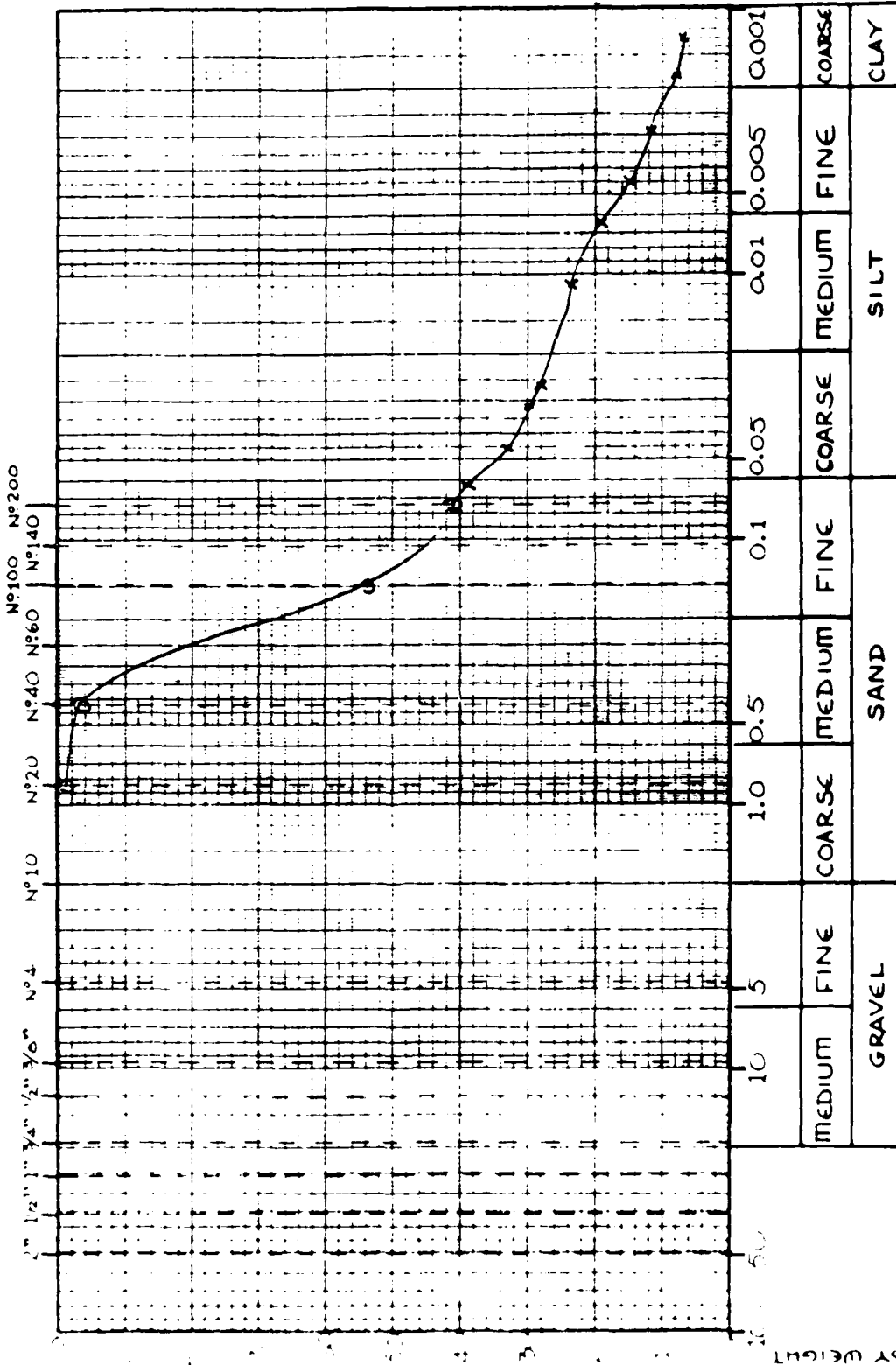
FILE NO: 1604-1
 SAMPLE NO: RB 8
 DATE: 155-165
 BY: _____

GRAVEL	%
SAND	66%
SILT	56%
CLAY	8%

DESCRIPTION:

COMMENTS

- SIEVE SIZES -



U.S.T. CLASSIFICATION
 - GRAIN SIZE (mm) -

% FINER BY WEIGHT

RB-8
155-165

FILE NO: _____
SAMPLE NO: _____
DATE: _____
BY: _____

HYDROMETER ANALYSIS

1245

ASTM. D 422-63.

[illegible]

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s : ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, C_m : _____

DISPERSING AGENT CORRECTION, C_d : _____

DRY WEIGHT OF SOIL, W_s : _____.

% < N° 60 SIEVE : _____.

$$N_1 = \left(\frac{\% < N:60}{100} \right) N = \text{_____} N \text{ (COMBINED ANALYSIS).}$$
$$N = R \frac{G}{G-1} \times \frac{100}{U_S} = R \underline{\hspace{2cm}}.$$

REMARKS: _____

RB - 6
155 - 165

FILE NO: _____
SAMPLE NO: _____
DATE: _____
BY: _____

- SIEVE ANALYSIS -

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT	
			RETAINED	PASSING
3 IN.				
2 1/2 IN.				
2 IN.				
1 1/2 IN.				
1 IN.				
3/4 IN.				
1/2 IN.				
3/8 IN.				
NO. 4				
NO. 10	2			100
NO. 20	2.5	1.0		99
NO. 40	1.2	2.4		97.6
NO. 60				
NO. 100	21.5	43.0		57.0
NO. 140				
NO. 200	6.4	12.8		44.2
PAN	20.4	40.8		
TOTAL	50.0	100.0		
REMARKS _____				

GRAIN SIZE CHART

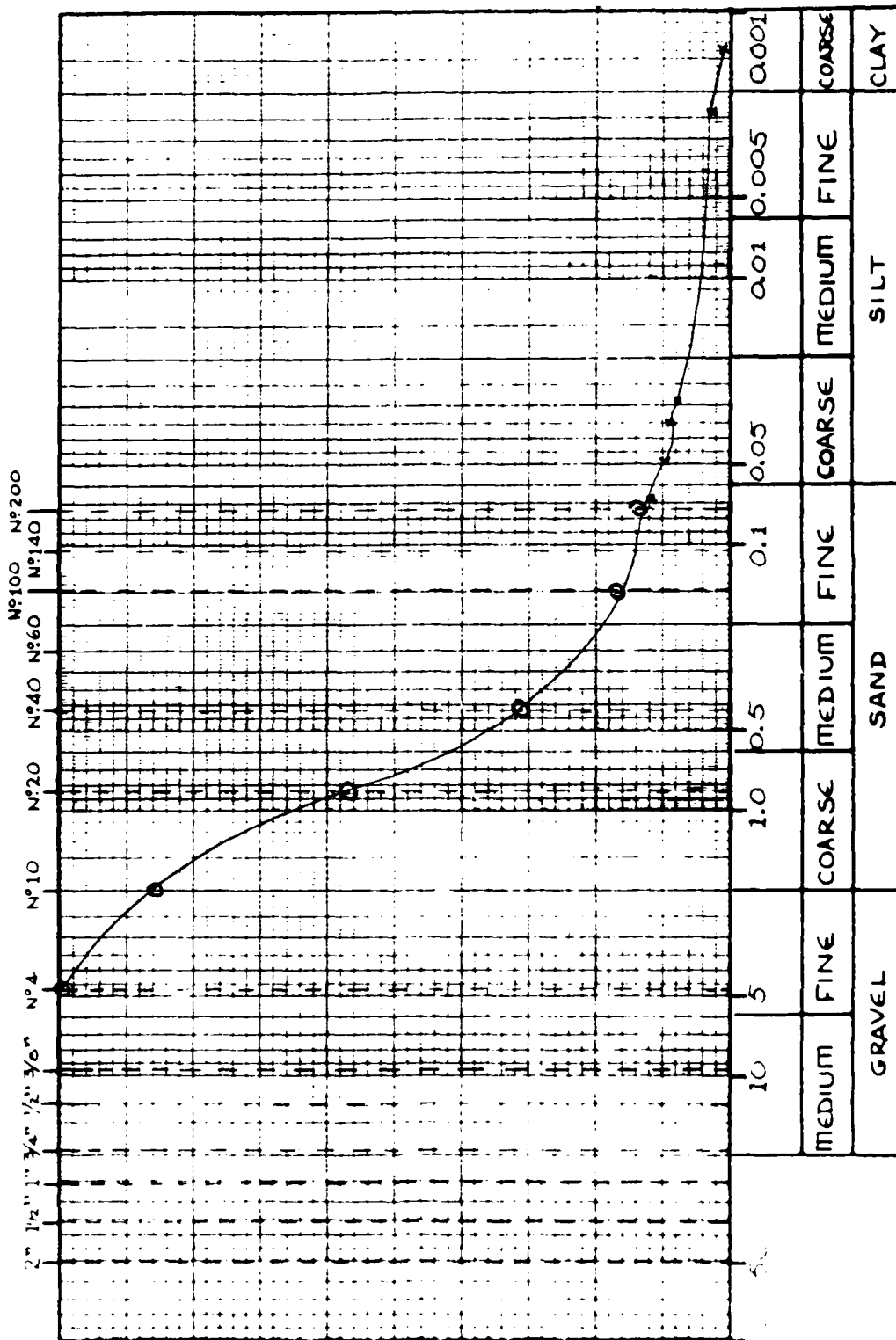
FILE NO: 1604-1
 SAMPLE NO: RB-8
 DATE: 170-220
 BY:

GRAVEL	14%
SAND	72%
SILT	10%
CLAY	2%

DESCRIPTION:

COMMENTS

- SIEVE SIZES -



U.S.T. CLASSIFICATION
 - GRAIN SIZE (mm) -

RB-8
170-220

FILE NO: _____
SAMPLE NO: _____
DATE: _____
BY: _____

HYDROMETER ANALYSIS

0130

A.S.T.M. D 422-63.

[illegible]

DESCRIPTION: _____

SPECIFIC GRAVITY ; G_s : ASSUMED = _____ ; CALCULATED = _____

MENISCUS CORRECTION, C_m : _____

DISPERSING AGENT CORRECTION, Cd : _____

DRY WEIGHT OF SOIL, W_s : _____.

% < N° 60 SIEVE : _____

$$N_1 = \left(\frac{\% < N^{\circ}60}{100} \right) N = \text{_____} N \text{ (COMBINED ANALYSIS).}$$

$$N = R \frac{G}{G-1} \times \frac{100}{U_S} = R \underline{\hspace{2cm}}.$$

REMARKS: _____

RB - 8

170 - 220

FILE NO: _____

SAMPLE NO: _____

DATE: _____

BY: _____

- SIEVE ANALYSIS -

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT	
			RETAINED	PASSING
3 IN.				
2 1/2 IN.				
2 IN.				
1 1/2 IN.				
1 IN.				
3/4 IN.				
1/2 IN.				
3/8 IN.				
NO. 4				100
NO. 10	6.8	13.6		86.4
NO. 20	14.6	29.2		57.2
NO. 40	13.0	26.0		31.2
NO. 60				
NO. 100	7.1	14.2		17
NO. 140				
NO. 200	1.6	3.2		13.2
PAN	5.9	13.8		2
TOTAL	50	100		
REMARKS _____				

GRAIN SIZE CHART

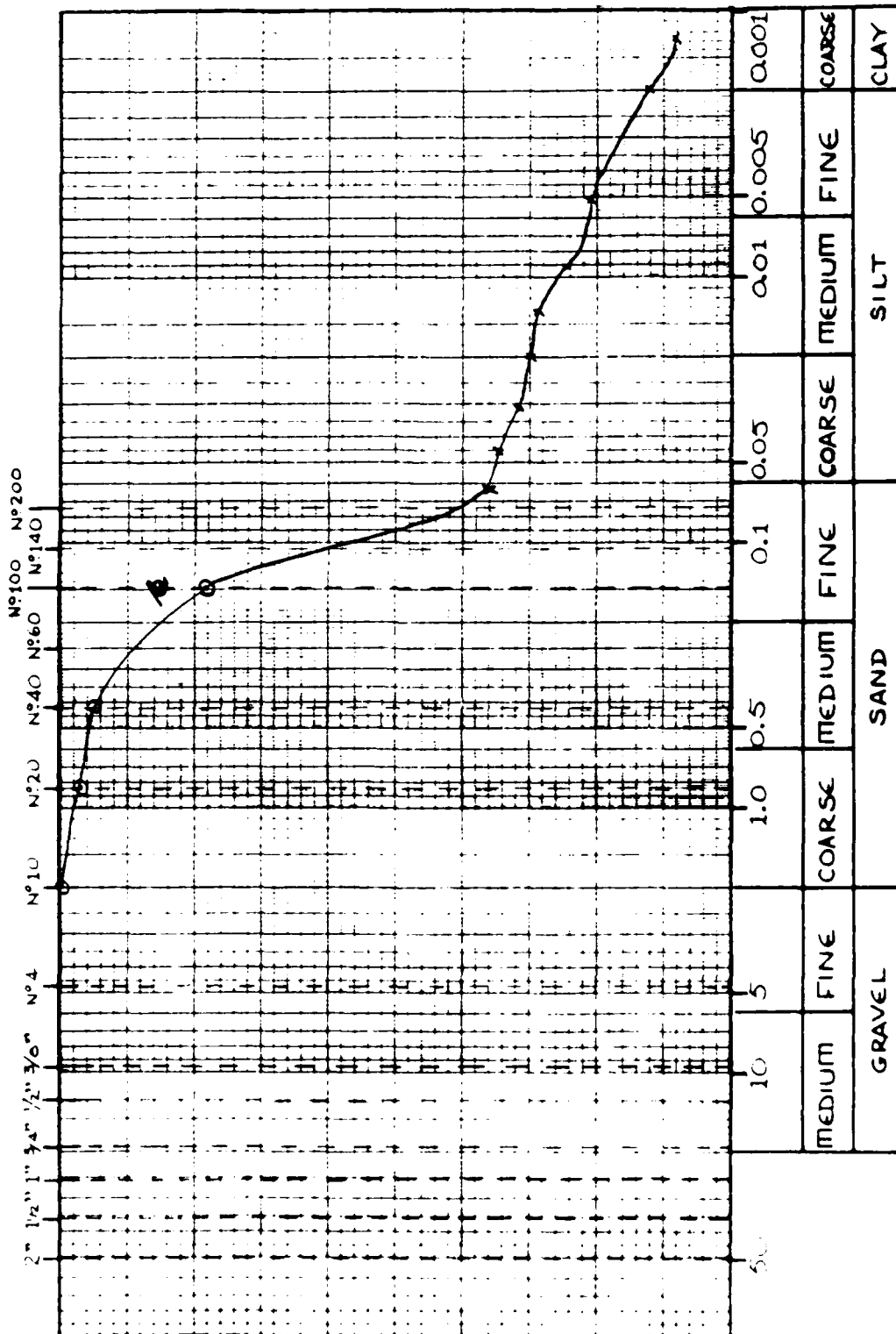
FILE NO: 1604-1
 SAMPLE NO: RB-9
 DATE: 100-103'
 BY:

GRAVEL	%
SAND	64
SILT	34
CLAY	12

DESCRIPTION:

COMMENTS

- SIEVE SIZES -



M.I.T. CLASSIFICATION
 - GRAIN SIZE (mm) -

% FINER BY WEIGHT

102-103

HYDROMETER ANALYSIS

FILE NO:

SAMPLE NO:

DATE:

BY:

12/5

A.S.T.M. D 422-63.

[illegible]

DESCRIPTION:

SPECIFIC GRAVITY ; G_s : ASSUMED = _____ ; CALCULATED = _____

MENISCUS CORRECTION, C_m : _____

DISPERSING AGENT CORRECTION, C_d : _____

DRY WEIGHT OF SOIL, U_s : _____

% < NO 60 SIEVE : _____.

$$N_1 = \left(\frac{\% < N^{\circ} 60}{100} \right) N = \text{_____} N \text{ (COMBINED ANALYSIS).}$$
$$N = R \frac{G}{G-1} \times \frac{100}{U_s} = R \underline{\hspace{2cm}}.$$

REMARKS: _____

RB - 9
106 - 103

FILE NO: _____
SAMPLE NO: _____
DATE: _____
BY: _____

- SIEVE ANALYSIS -

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT	
			RETAINED	PASSING
3 IN.				
2 1/2 IN.				
2 IN.				
1 1/2 IN.				
1 IN.				
3/4 IN.				
1/2 IN.				
3/8 IN.				
NO. 4				100.0
NO. 10	0.4	0.8		99.2
NO. 20	1.0	2.0		97.2
NO. 40	0.9	1.8		95.4
NO. 60				
NO. 100	5.3	10.6		84.8
NO. 140				
NO. 200	3.3	6.6		78.2
PAN	39.1	78.2		0
TOTAL	50.0	100.0		
REMARKS _____				

GRAIN SIZE CHART

FILE NO: 1604-1

SAMPLE NO: RB-9

DATE: 16r'-200'

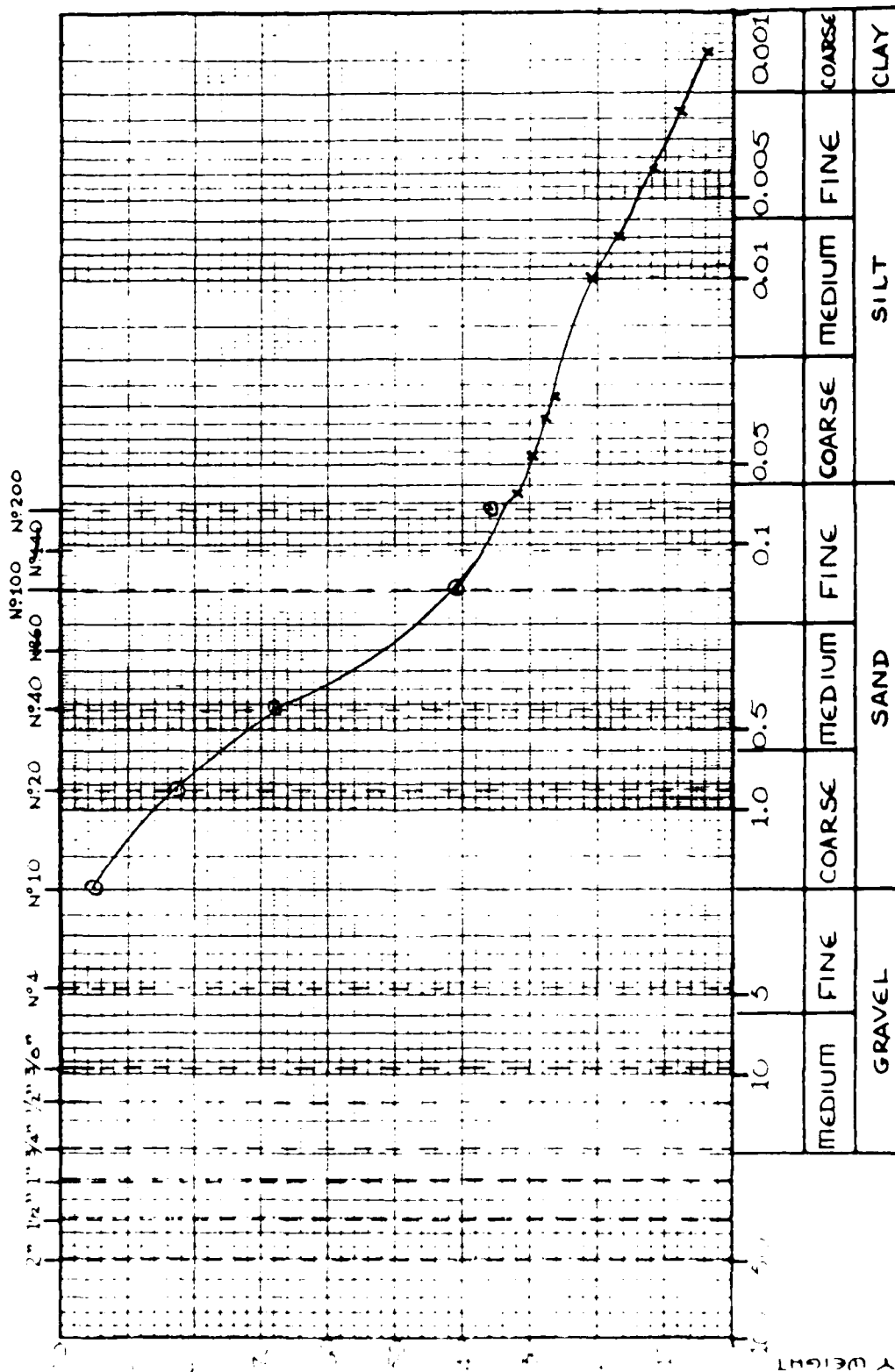
BY:

GRAVEL	%
SAND	67%
SILT	25%
CLAY	6%

DESCRIPTION:

COMMENTS

- SIEVE SIZES -



U.S. CLASSIFICATION
- GRAIN SIZE (mm) -

% FINER BY WEIGHT

$K \times \sqrt{\frac{U}{1}}$

RB-9
165-200

FILE NO: _____
SAMPLE NO: _____
DATE: _____
BY: _____

HYDROMETER ANALYSIS

0125

ASTM D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R _H	TEMP. °C	R _H = R _H + (C _m C _d)	DIA- METER (mm)	L	K	N (%)	N ₁ (%)
		1/2	16	-	16	0.065	13.5	.0126	32	
		1	15.2	-	15.2	0.047	13.7	"	30.4	
		2	14	-	14.0	.033	13.8	"	28.0	
		3	13.3	27	13.3	.027	14.0	"	26.6	
		19	10.5	"	10.5	.010	14.3	"	21.0	
		47	8.5	"	8.5	.0070	14.7	"	17.0	
	0400	155	6.0	"	6.0	.0039	15.2	"	12.0	
	0900	455	5.0	24.5	4.1	.0024	15.3	.0130	8.2	
	2200	1235	1.5	28	1.9	.0014	15.8	.0124	3.8	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, C_m: _____

DISPERSING AGENT CORRECTION, C_d: _____

DRY WEIGHT OF SOIL, U_s: _____

% < N#60 SIEVE: _____

$N_1 = \left(\frac{\% < N\#60}{100} \right) N = \text{_____} N$ (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{U_s} = R \text{_____}$

REMARKS: _____

RB - 9
165 - 200

FILE NO: _____
SAMPLE NO: _____
DATE: _____
BY: _____

- SIEVE ANALYSIS -

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT	
			RETAINED	PASSING
3 IN.				
2 1/2 IN.				
2 IN.				
1 1/2 IN.				
1 IN.				
3/4 IN.				
1/2 IN.				
3/8 IN.				
NO. 4				100.0
NO. 10	2.3	4.6		95.4
NO. 20	6.2	12.4		83
NO. 40	7.3	14.6		69.4
NO. 60				
NO. 100	13.7	27.4		41
NO. 140				
NO. 200	2.4	4.8		26.2
PAN	18.1	36.2		0
TOTAL	50.0	100.0		
REMARKS _____				

GRAIN SIZE CHART

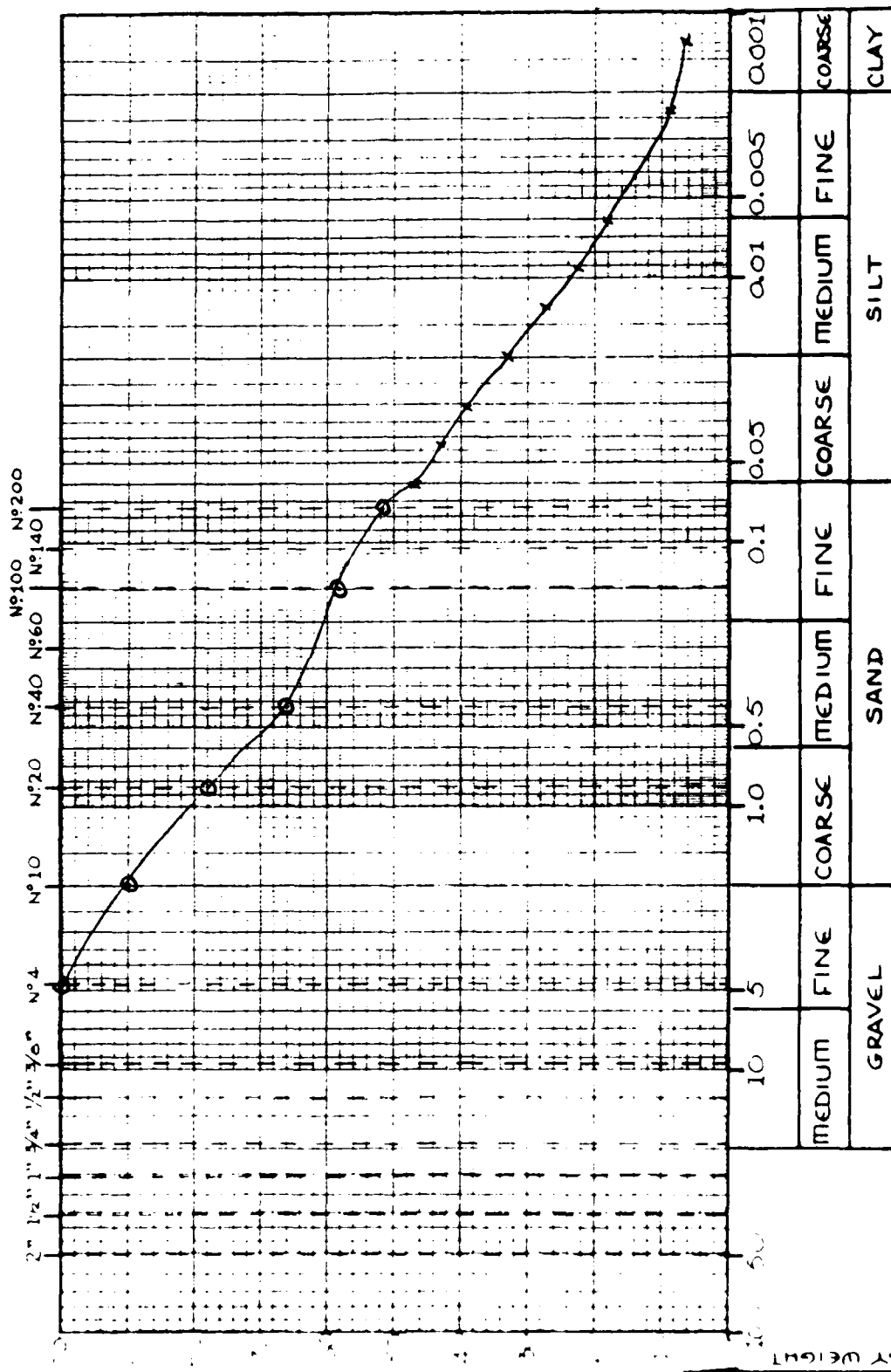
FILE NO: 1604-1
 SAMPLE NO: RB 9
 DATE: 120' - 127'
 BY:

GRAVEL	7 %
SAND	23 %
SILT	39 %
CLAY	31 %

DESCRIPTION:

COMMENTS:

- SIEVE SIZES -



M.I.T. CLASSIFICATION
 - GRAIN SIZE (mm) -

% FINER BY WEIGHT

RB-9
120-127

FILE NO: _____
SAMPLE NO: _____
DATE: _____
BY: _____

HYDROMETER ANALYSIS

1250

A.S.T.M. D 422-63.

[illegible]

DESCRIPTION:

SPECIFIC GRAVITY ; G_s : ASSUMED = _____ ; CALCULATED = _____

MENISCUS CORRECTION, C_m : _____

DISPERSING AGENT CORRECTION, C_d : _____

DRY WEIGHT OF SOIL, U_g : _____

% < N° 60 SIEVE : _____.

$$N_1 = \left(\frac{\% < N:60}{100} \right) N = \text{_____} N \text{ (COMBINED ANALYSIS).}$$
$$N = R \frac{G}{G-1} \times \frac{100}{15} = R \underline{\hspace{2cm}}.$$

REMARKS: _____

RB-9
120-127

FILE NO: _____
SAMPLE NO: _____
DATE: _____
BY: _____

- SIEVE ANALYSIS -

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT	
			RETAINED	PASSING
3 IN.				
2 1/2 IN.				
2 IN.				
1 1/2 IN.				
1 IN.				
3/4 IN.				
1/2 IN.				
3/8 IN.				
NO. 4				100
NO. 10	4.9	9.8		90.2
NO. 20	6.1	12.2		78.0
NO. 40	6.0	12.0		66.0
NO. 60				
NO. 100	4.1	8.2		57.8
NO. 140				
NO. 200	2.9	5.8		52.0
PAN	26.0	52.0		
TOTAL	50.0	100.0		
REMARKS _____				

GRAIN SIZE CHART

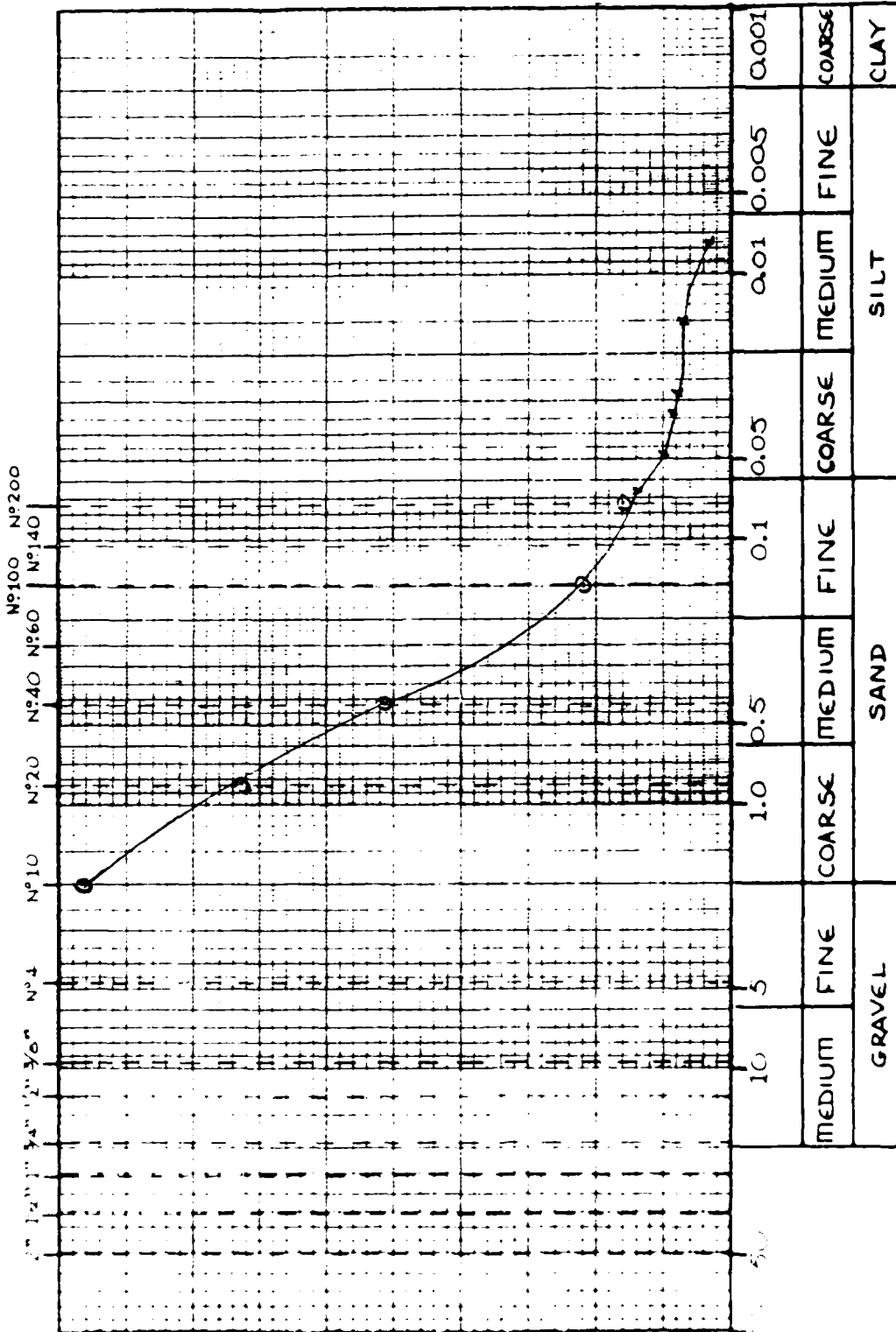
FILE NO: 1604-1
 SAMPLE NO: RB 9
 DATE: 140'-160'
 BY:

GRAVEL	3 %
SAND	85 %
SILT	12 %
CLAY	4 %

DESCRIPTION:

COMMENTS

- SIEVE SIZES -



M.I.T. CLASSIFICATION
 - GRAIN SIZE (mm) -

% FINER BY WEIGHT

140-160

FILE NO:

SAMPLE NO:

DATE :

BY:

HYDROMETER ANALYSIS

1140

ASTM. D 422-63.

[illegible]

DESCRIPTION: _____

SPECIFIC GRAVITY ; G_s : ASSUMED = _____ ; CALCULATED = _____

MENISCUS CORRECTION, C_m : _____

DISPERSING AGENT CORRECTION, Cd : _____

DRY WEIGHT OF SOIL, U_s : _____.

% < NO 60 SIEVE : _____.

$$N_1 = \left(\frac{\% < N^{\circ} 60}{100} \right) N = \text{---} N \text{ (COMBINED ANALYSIS).}$$
$$N = R \frac{G}{G-1} \times \frac{100}{U_s} = R \underline{\hspace{2cm}}.$$

REMARKS: _____

R3-9
140-160

FILE NO: _____
SAMPLE NO: _____
DATE: _____
BY: _____

- SIEVE ANALYSIS -

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT	
			RETAINED	PASSING
3 IN.				
2 1/2 IN.				
2 IN.				
1 1/2 IN.				
1 IN.				
3/4 IN.				
1/2 IN.				
3/8 IN.				
NO. 4				100
NO. 10	1.7	3.4		96.6
NO. 20	11.7	23.4		72.2
NO. 40	10.8	21.6		50.6
NO. 60				
NO. 100	14.7	29.4		22.2
NO. 140				
NO. 200	3.2	6.4		15.8
PAN	2.9	15.8		0
TOTAL	50.0	100.0		
REMARKS _____				

GRAIN SIZE CHART

FILE NO: 1604-1

SAMPLE NO: RB 10-1

DATE: 7-5-80

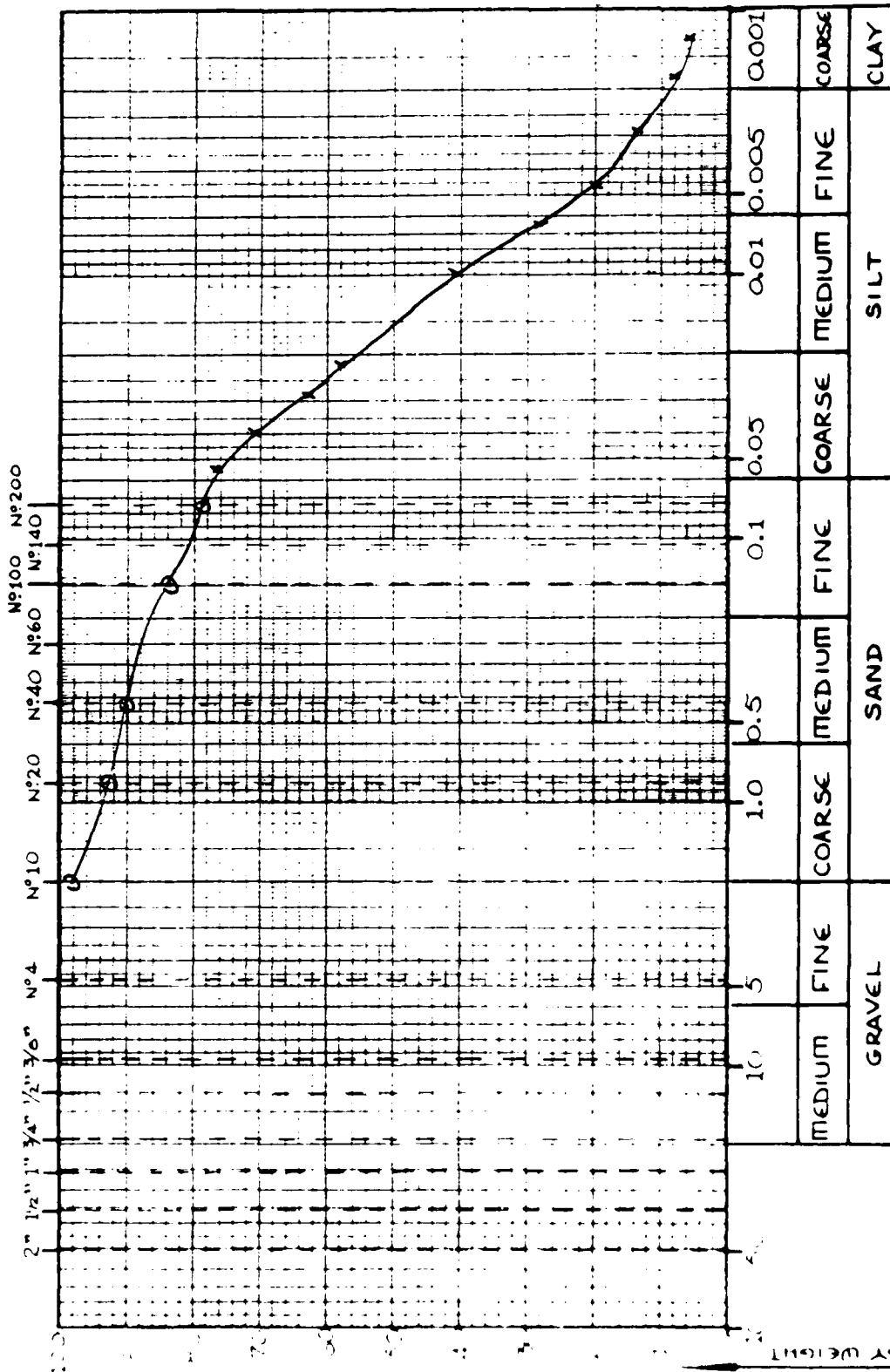
BY:

GRAVEL	2%
SAND	21%
SILT	69%
CLAY	8%

DESCRIPTION:

COMMENTS:

- SIEVE SIZES -



U.S.T. CLASSIFICATION
- GRAIN SIZE (mm) -

CLAY

COARSE

FINE

MEDIUM

COARSE

FINE

MEDIUM

COARSE

FINE

MEDIUM

COARSE

FINE

MEDIUM

COARSE

FINE

MEDIUM

EB-10-1

75-80

FILE NO: _____

SAMPLE NO: _____

DATE: _____

BY: _____

HYDROMETER ANALYSIS

1250

ASTM D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R _H	TEMP. °C	R _H = R _H + (C _m C _d)	DIA-- METER (mm)	L	K	N (%)	N ₁ (%)
		1/2	38	—	38.4	0.055	9.9	.0124	76.8	
		1	35	—	35.4	0.040	10.4	"	70.8	
		2	31	—	31.4	0.029	11.1	"	62.8	
		3	28.5	28	28.9	0.024	11.4	"	57.8	
		19	20	—	20.4	0.010	12.9	"	40.8	
		56	13.5	26	13.9	0.0065	13.8	"	27.8	
		106	10	27	10.0	0.0047	14.5	.0126	20.0	
	0530	280	7.5	26	7.1	0.0029	14.8	.0127	14.2	
	1400	795	4.0	27	4.0	0.0018	15.5	.0126	8.0	
		1560	3.0	27	3.0	0.0013	15.6	"	6.0	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s : ASSUMED = _____; CALCULATED = _____MENISCUS CORRECTION, C_m : _____DISPERSING AGENT CORRECTION, C_d : _____DRY WEIGHT OF SOIL, U_s : _____

% < N°60 SIEVE: _____

 $N_1 = \left(\frac{\% < N°60}{100} \right) N = \text{_____} N$ (COMBINED ANALYSIS). $N = R \frac{G}{G-1} \times \frac{100}{U_s} = R \text{_____}$

REMARKS: _____

RB 10-1

15-30

FILE NO: _____

SAMPLE NO: _____

DATE: _____

BY: _____

- SIEVE ANALYSIS -

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT	
			RETAINED	PASSING
3 IN.				
2 1/2 IN.				
2 IN.				
1 1/2 IN.				
1 IN.				
3/4 IN.				
1/2 IN.				
3/8 IN.				
NO. 4				100.0
NO. 10	1.2	2.4		97.6
NO. 20	2.4	4.8		92.8
NO. 40	1.3	2.6		90.2
NO. 60				
NO. 100	2.9	5.8		84.4
NO. 140				
NO. 200	2.5	5.0		79.4
PAN	39.7	79.4		
TOTAL	50.0	100.0		
REMARKS _____				

GRAIN SIZE CHART

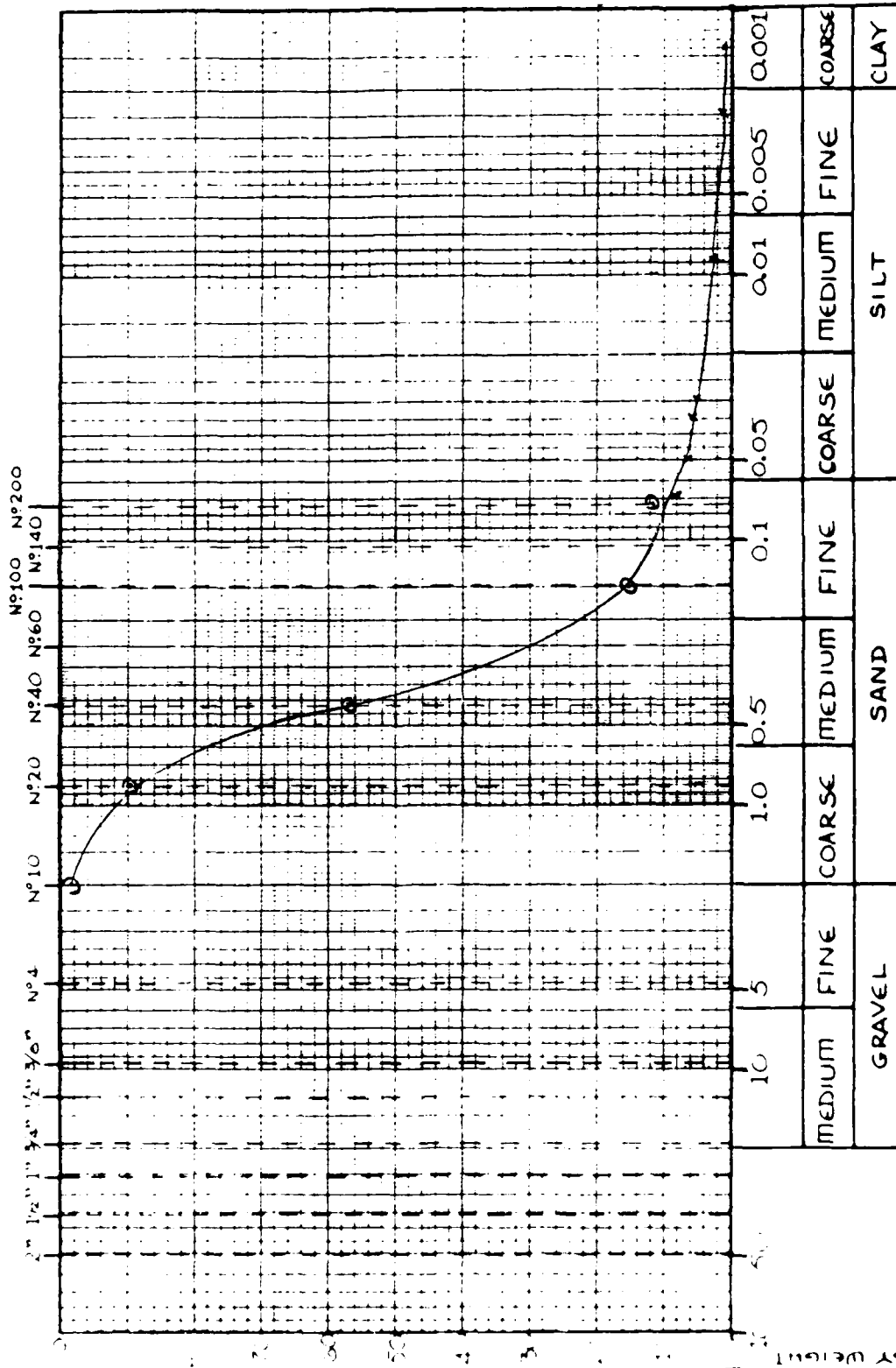
FILE NO: 1604-1
 SAMPLE NO: RB 10-2
 DATE: 9-5-100
 BY: _____

GRAVEL	%
SAND	92%
SILT	7%
CLAY	1%

DESCRIPTION:

COMMENTS:

- SIEVE SIZES -



U.T. CLASSIFICATION
 - GRAIN SIZE (mm) -

RB 10-2

95 - 100

FILE NO: _____
 SAMPLE NO: _____
 DATE: _____
 BY: _____

- SIEVE ANALYSIS -

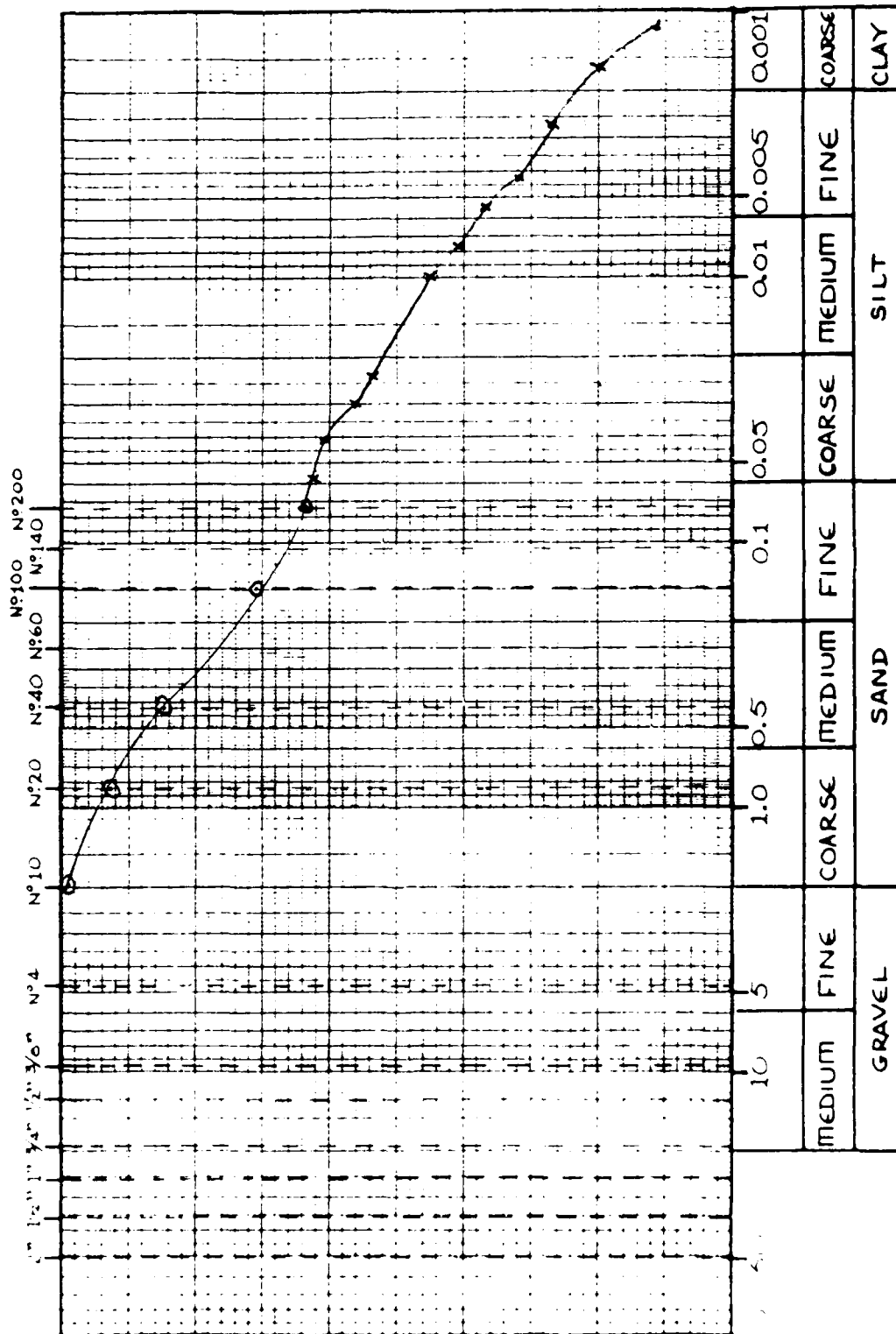
SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT	
			RETAINED	PASSING
3 IN.				
2 1/2 IN.				
2 IN.				
1 1/2 IN.				
1 IN.				
3/4 IN.				
1/2 IN.				
3/8 IN.				
NO. 4				100
NO. 10	0.8	1.6		99.2
NO. 20	4.4	8.8		91.2
NO. 40	16.3	32.6		67.4
NO. 60				
NO. 100	20.9	41.8		58.2
NO. 140				
NO. 200	1.5	3.0		97.0
PAN	2.1	4.2		0
TOTAL	50	100		
REMARKS _____				

GRAIN SIZE CHART

FILE NO: 1604-1
 SAMPLE NO: RB 10-3
 DATE: 125'-140'
 BY:

GRAVEL	%
SAND	37%
SILT	40%
CLAY	23%

- SIEVE SIZES -



M.I.T. CLASSIFICATION
 -GRAIN SIZE (mm)-

DESCRIPTION:

COMMENTS:

% FINER BY WEIGHT

RB-10-3

135-140

FILE NO: _____

SAMPLE NO: _____

DATE: _____

BY: _____

HYDROMETER ANALYSIS

1235

AST.M. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R _H	TEMP. °C	R _H = R _H + (C _m C _d)	DIA- METER (mm)	L	K	N (%)	N ₁ (%)
		1/2	31	✓	31.4	0.058	11.1	.0124	62.8	
		1	30	✓	30.4	0.041	11.2	"	60.8	
		2	27.5	✓	27.9	0.030	11.5	"	55.8	
		3	26.5	28	26.9	0.024	11.7	"	53.8	
		19	22	"	22.4	0.010	12.5	"	44.8	
		33	20	"	20.4	0.0078	12.9	"	40.8	
		68	18	"	18.4	0.0055	13.2	"	36.8	
		117	16	27	16.0	0.0043	13.5	.0126	32.0	
6	0530	295	14	26	13.6	0.0027	13.8	.0127	27.2	
	1400	810	10	27	10.0	0.0017	14.5	.0126	20.0	
		26 hr	5.5	27	5.5	0.0012	15.2	"	11.0	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____MENISCUS CORRECTION, C_m: _____DISPERSING AGENT CORRECTION, C_d: _____DRY WEIGHT OF SOIL, U_s: _____% < N₆₀ SIEVE: _____
$$N_1 = \left(\frac{\% < N_{60}}{100} \right) N = \text{_____} N \text{ (COMBINED ANALYSIS).}$$

$$N = R \frac{G}{G-1} \times \frac{100}{U_s} = R \text{ _____}$$

REMARKS: _____

R13-10-3

135-140

FILE NO: _____

SAMPLE NO: _____

DATE: _____

BY: _____

- SIEVE ANALYSIS -

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT	
			RETAINED	PASSING
3 IN.				
2 1/2 IN.				
2 IN.				
1 1/2 IN.				
1 IN.				
3/4 IN.				
1/2 IN.				
3/8 IN.				
NO. 4				100.0
NO. 10	5.6	1.2		98.8
NO. 20	3.0	6.2		92.8
NO. 40	4.0	8.2		91.8
NO. 60				
NO. 100	7.0	14.0		85.8
NO. 140				
NO. 200	3.2	6.4		79.4
PAN	22.2	64.4		
TOTAL	50.0	100.0		
REMARKS _____				

GRAIN SIZE CHART

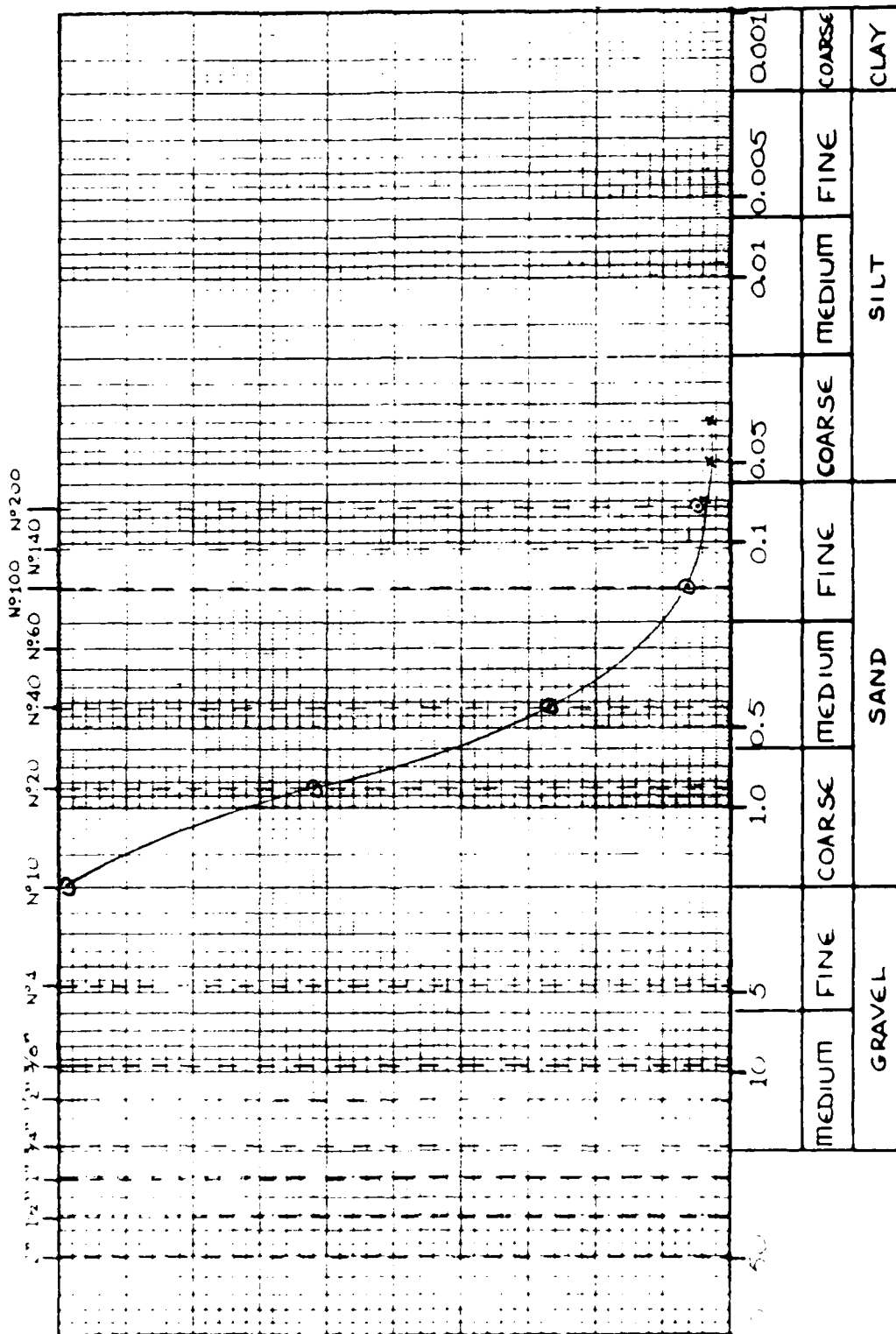
FILE NO: 1604-4
 SAMPLE NO: RB 10-4
 DATE: 155'-160'
 BY:

GRAVEL	%
SAND	97 %
SILT	3 %
CLAY	%

DESCRIPTION:

COMMENTS

- SIEVE SIZES -



U.S. STANDARD SIEVE SIZE
 - GRAIN SIZE (mm) -

% FINER BY WEIGHT

RB 10 - 4

155 - 160

FILE NO: _____

SAMPLE NO: _____

DATE: _____

BY: _____

- SIEVE ANALYSIS -

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT	
			RETAINED	PASSING
3 IN.				
2 1/2 IN.				
2 IN.				
1 1/2 IN.				
1 IN.				
3/4 IN.				
1/2 IN.				
3/8 IN.				
NO. 4				100.0
NO. 10	0.6	1.2		99.8
NO. 20	18.5	27.0		72.2
NO. 40	17.3	34.6		65.4
NO. 60				
NO. 100	10.5	21.0		79.0
NO. 140				
NO. 200	0.6	1.2		98.8
PAN	2.5	5.0		93.8
TOTAL	50.0	100.0		
REMARKS _____				

GRAIN SIZE CHART

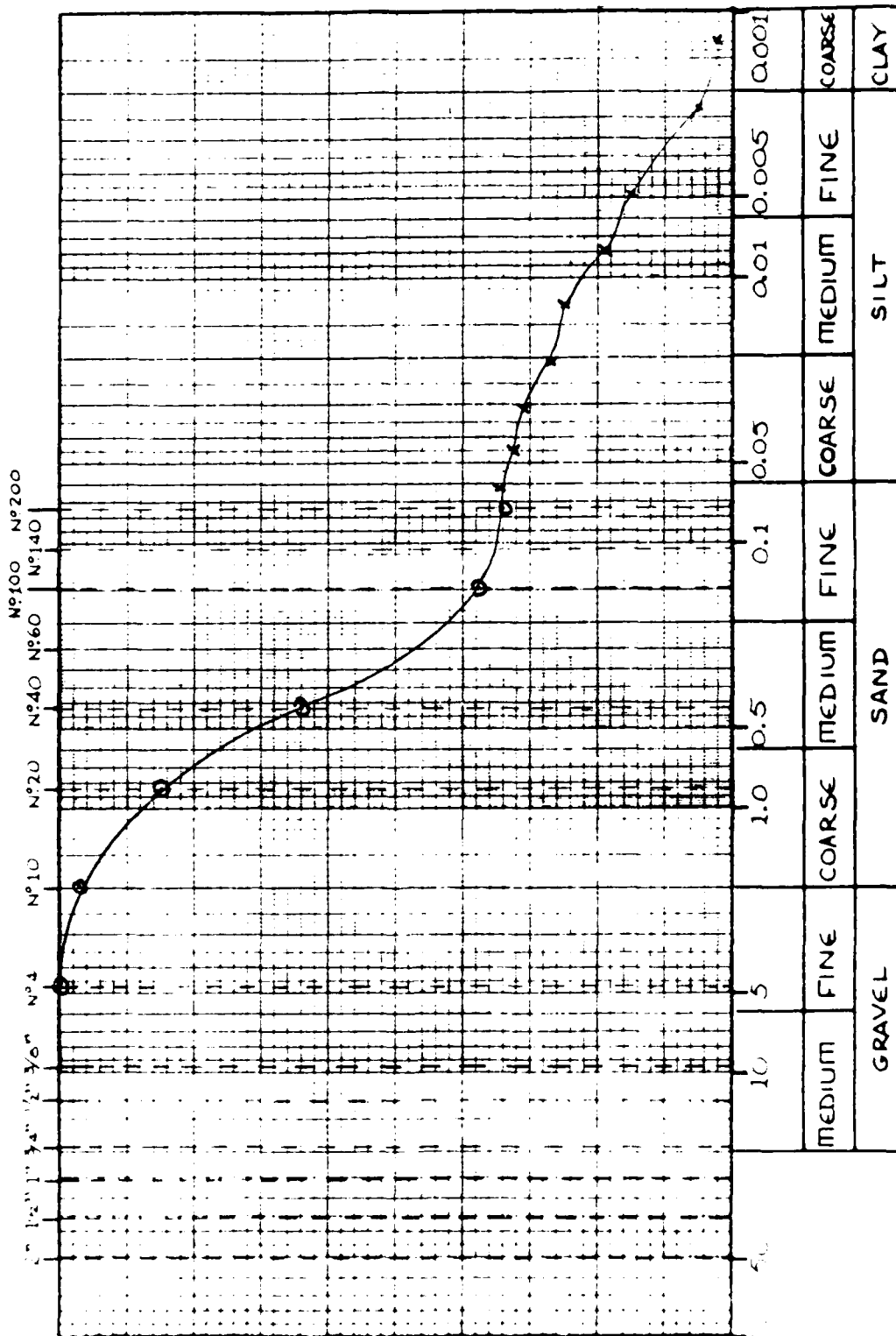
FILE NO: 1604-1
 SAMPLE NO: RB-11
 DATE: 100'-105'
 BY:

GRAVEL	3 %
SAND	63 %
SILT	30 %
CLAY	4 %

DESCRIPTION:

COMMENTS

- SIEVE SIZES -



M.I.T. CLASSIFICATION
 - GRAIN SIZE (mm) -

% FINER BY WEIGHT

RB-11

100-105

FILE NO:

SAMPLE NO: RB-11

DATE: Aug 15-54

BY: [Signature]

HYDROMETER ANALYSIS

11:50

AST.M. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R _H	TEMP. °C	R _H = R _H + (C _m C _d)	DIA- METER (mm)	L	K	N (%)	N ₁ (%)
		1/2	16	—	17.3	0.063	13.5	.0122	34.6	
		1	15	—	16.3	0.045	13.7	"	32.6	
		2	14	30°C	15.3	0.032	13.8	"	30.6	
		5	12	—	13.3	0.021	14.2	"	26.6	
		13	11	—	12.3	0.013	14.5	"	24.6	
	1224	34	8	30°C	9.3	0.0080	14.8	"	18.6	
	1:24	94	6	—	7.3	0.0049	15.2	"	14.6	
	0250	480	3.5	25	2.6	0.0023	15.5	.0129	5.2	
		1440	1.0	27	1.0	0.0013	16.0	.0126	2.0	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s : ASSUMED = _____; CALCULATED = _____MENISCUS CORRECTION, C_m : _____DISPERSING AGENT CORRECTION, C_d : _____DRY WEIGHT OF SOIL, U_s : _____

% < N°60 SIEVE: _____

$$N_1 = \left(\frac{\% < N°60}{100} \right) N = \text{_____} N \text{ (COMBINED ANALYSIS).}$$

$$N = R \frac{G}{G-1} \times \frac{100}{U_s} = R \text{ _____}$$

REMARKS: _____

RB-11
100' - 105'

LH

- SIEVE ANALYSIS -

FILE NO: _____
SAMPLE NO: _____
DATE: _____
BY: _____

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT	
			RETAINED	PASSING
3 IN.				
2 1/2 IN.				
2 IN.				
1 1/2 IN.				
1 IN.				
3/4 IN.				
1/2 IN.				
3/8 IN.				
NO. 4				100.0
NO. 10	1.5	3.0		97
NO. 20	6.1	12.2		84.8
NO. 40	10.5	21.0		63.8
NO. 60				
NO. 100	13.0	26.0		37.8
NO. 140				
NO. 200	1.7	3.4		34.4
PAN	17.2	34.4		0
TOTAL	50.0	100.0		
REMARKS _____				

GRAIN SIZE CHART

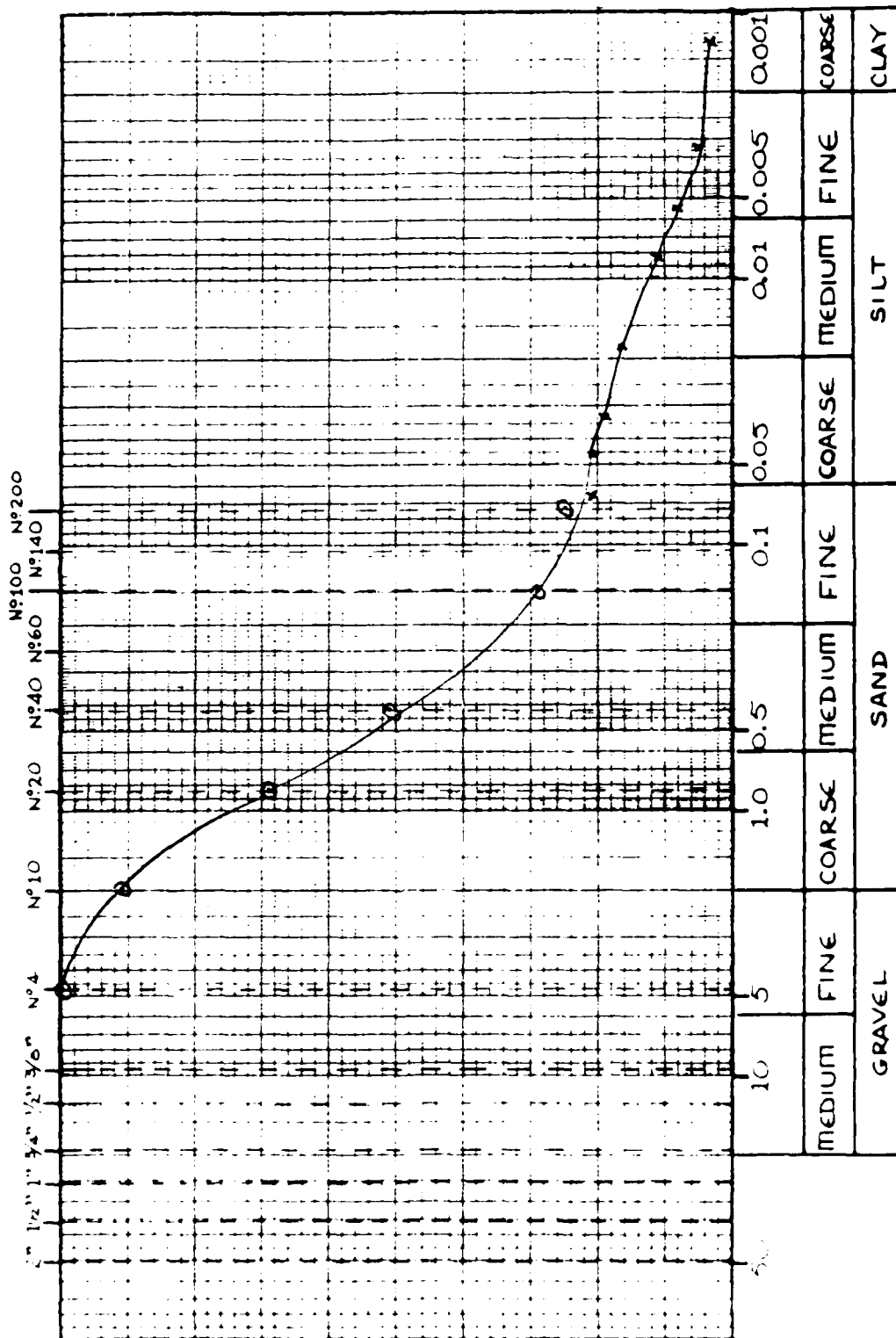
FILE NO: 1604-1
 SAMPLE NO: RB 11
 DATE: 130'-135'
 BY:

GRAVEL	4 %
SAND	67 %
SILT	30 %
CLAY	4 %

DESCRIPTION:

COMMENTS

- SIEVE SIZES -



M.I.T. CLASSIFICATION
 - GRAIN SIZE (mm) -

% FINER BY WEIGHT

RB-11

130-135

FILE NO: _____

SAMPLE NO: _____

DATE: _____

BY: _____

HYDROMETER ANALYSIS

.1210

ASTM D 422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R _H	TEMP. °C	R _H = R _H + (C _m C _d)	DIA- METER (mm)	L	K	N (%)	N ₁ (%)
		1/2	9		10.3	0.066	14.7	.0122	20.6	
		1	"		10.3	0.046	14.3	"	20.6	
		2	8		9.3	0.033	14.8	"	18.6	
		3	7		8.3	0.027	15.0	"	16.6	
		7	6.5	30	7.8	0.018	15.0	"	15.6	
		32	4.0	—	5.3	0.0085	15.5	"	10.6	
		77	3.0	29	3.9	0.0055	15.6	.0123	7.9	
	0400	235	2.0	28	2.4	0.0032	15.8	.0124	4.8	
	0900	365	1.5	27	1.5	0.0031	15.8	.0126	3.0	
	2030	1225	0	30	1.3	0.0014	16.1	.0122	2.6	

DESCRIPTION: _____

SPECIFIC GRAVITY, G_s : ASSUMED = _____; CALCULATED = _____MENISCUS CORRECTION, C_m : _____DISPERSING AGENT CORRECTION, C_d : _____DRY WEIGHT OF SOIL, U_s : _____

% < NO. 60 SIEVE: _____

 $N_1 = \left(\frac{\% < \text{NO. 60}}{100} \right) N = \text{_____} N$ (COMBINED ANALYSIS). $N = R \frac{G}{G-1} \times \frac{100}{U_s} = R \text{_____}$

REMARKS: _____

RB - 11

130 - 135

FILE NO: _____
 SAMPLE NO: _____
 DATE: _____
 BY: _____

- SIEVE ANALYSIS -

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT	
			RETAINED	PASSING
3 IN.				
2 1/2 IN.				
2 IN.				
1 1/2 IN.				
1 IN.				
3/4 IN.				
1/2 IN.				
3/8 IN.				
NO. 4				100.0
NO. 10	4.3	8.6		91.4
NO. 20	11.4	22.8		68.6
NO. 40	8.7	17.4		51.2
NO. 60				
NO. 100	11.0	22.0		79.2
NO. 140				
NO. 200	2.3	4.6		94.6
PAN	12.3	24.6		0
TOTAL	50.0	100.0		
REMARKS _____				

GRAIN SIZE CHART

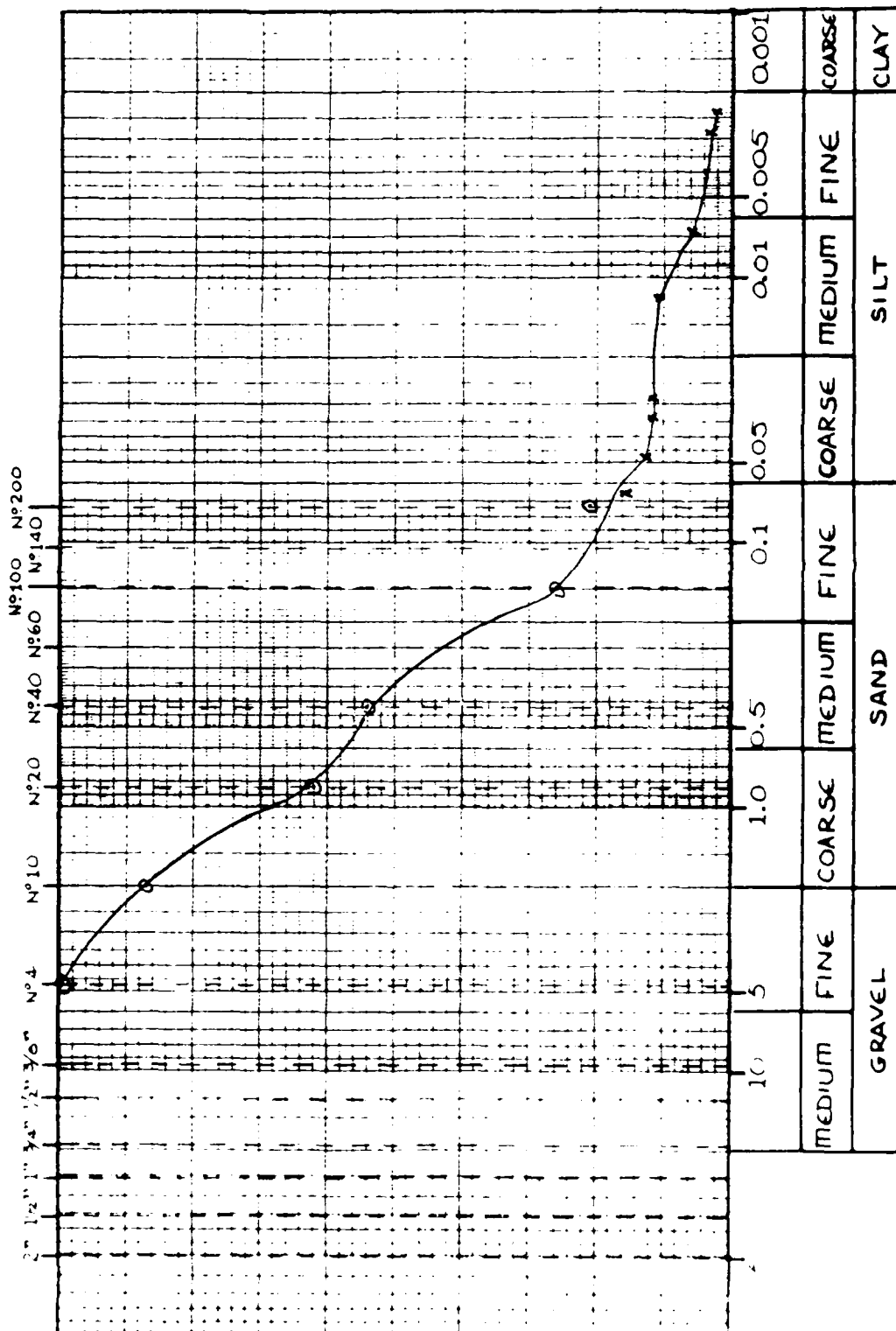
FILE NO: 1604-1
 SAMPLE NO: RB 11
 DATE: 159'-192'
 BY:

GRAVEL	13 %
SAND	71 %
SILT	10 %
CLAY	0 %

DESCRIPTION:

COMMENTS:

- SIEVE SIZES -



M.I.T. CLASSIFICATION
 - GRAIN SIZE (mm) -

RB-11
159-19v

FILE NO: _____
SAMPLE NO: _____
DATE: _____
BY: _____

HYDROMETER ANALYSIS

1215

ASTM. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R _H	TEMP. °C	R _H = R _H + (CmCd)	DIA- METER (mm)	L	K	N (%)	N ₁ (%)
		1/√	7	—	7.9	0.067	15	.0123	15.8	
		1	6	—	6.9	0.048	15.2	"	13.8	
		√	5.5	—	6.4	0.034	15.2	"	12.8	
		3	5.0	29	5.9	0.028	15.3	"	11.8	
		15	4.5	—	5.4	0.012	15.3	"	10.8	
	1310	√	2.5	28	2.9	0.0066	15.6	.0124	5.8	
		29	2.0	26	1.6	0.0029	15.8	.0127	3.8	
	0800	465	1.0	26	0.6	0.0024	16.0	"	1.8	
		955	1.0	27	1.0	0.0016	16.0	.0126	2.8	

DESCRIPTION: _____
 SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____
 MENISCUS CORRECTION, C_m: _____
 DISPERSING AGENT CORRECTION, C_d: _____
 DRY WEIGHT OF SOIL, U_s: _____
 % < N°60 SIEVE: _____

$$N_1 = \left(\frac{\% < N°60}{100} \right) N = \text{_____} N \text{ (COMBINED ANALYSIS).}$$

$$N = R \frac{G}{G-1} \times \frac{100}{U_s} = R \text{ _____}$$

 REMARKS: _____

R3-11
150-192
(70)

- SIEVE ANALYSIS -

FILE NO: _____
SAMPLE NO: _____
DATE: _____
BY: _____

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT	
			RETAINED	PASSING
3 IN.				
2 1/2 IN.				
2 IN.				
1 1/2 IN.				
1 IN.				
3/4 IN.				
1/2 IN.				
3/8 IN.				
NO. 4				100
NO. 10	6.7	13.4		86.6
NO. 20	12.3	24.6		75.4
NO. 40	3.8	26		74
NO. 60				
NO. 100	14.0	25.0		75.0
NO. 140				
NO. 200	2.8	5.6		94.4
PAN	10.4	20.8		
TOTAL	50.0	100.0		

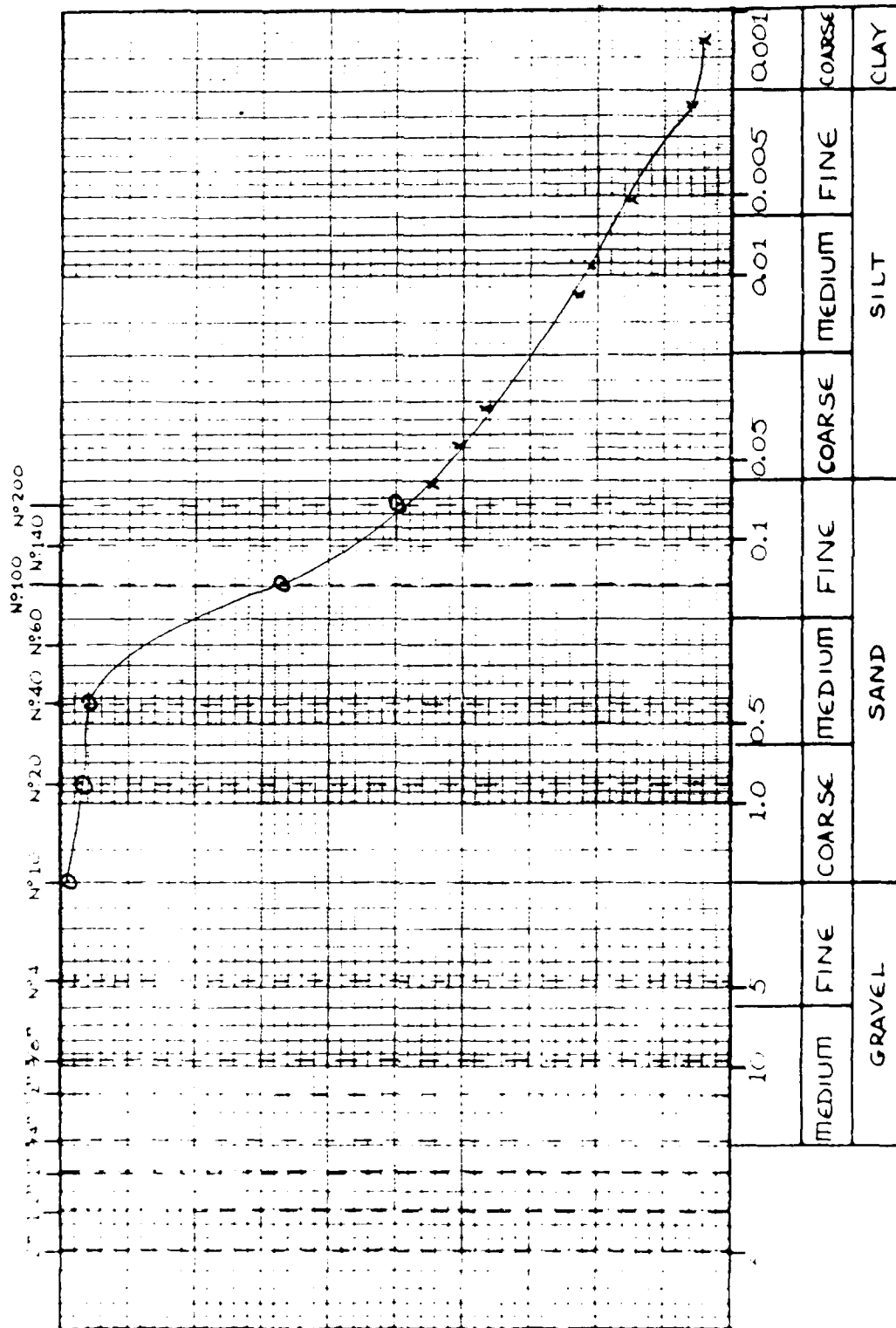
REMARKS _____

GRAIN SIZE CHART

FILE NO: 1604-1
 SAMPLE NO: RB 12
 DATE: 90-100'
 BY:

GRAVEL	%
SAND	55%
SILT	40%
CLAY	5%

- SIEVE SIZES -



M.I.T. CLASSIFICATION
 - GRAIN SIZE (mm) -

DESCRIPTION:

COMMENTS:

% FINER BY WEIGHT

RB12
90-10

FILE NO: _____
SAMPLE NO: _____
DATE: _____
BY: _____

HYDROMETER ANALYSIS

ASTM. D 422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R _H	TEMP. °C	R _H = R _H + (CmCd)	DIA- METER (mm)	L	K	N (%)	N ₁ (%)
		1/2	21	—	22.3	0.061	12.7	.0122	44.6	
		1	12	—	20.3	0.044	13.0	"	40.6	
		2	12	20	13.3	0.033	14.2	"	26.6	
		3	—	"	—			"		
		13	10	"	11.3	0.013	14.5	"	22.6	
	13.5	25	9	"	10.3	0.0094	14.7	"	20.6	
	14	85	—	"	7.3	0.0052	15.2	"	14.6	
		470	—	25	3.1	0.0023	15.5	.0129	6.2	
		480	2	27	2	0.0013	15.8	.0126	4	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, C_m: _____

DISPERSING AGENT CORRECTION, C_d: _____

DRY WEIGHT OF SOIL, U_s: _____

% < N°60 SIEVE: _____

$N_1 = \left(\frac{\% < N°60}{100} \right) N = \text{_____} N$ (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{U_s} = R \text{_____}$

REMARKS: _____

R - 12

90 - 100

FILE NO: _____
 SAMPLE NO: _____
 DATE: _____
 BY: _____

- SIEVE ANALYSIS -

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT	
			RETAINED	PASSING
3 IN.				
2 1/2 IN.				
2 IN.				
1 1/2 IN.				
1 IN.				
3/4 IN.				
1/2 IN.				
3/8 IN.				
NO. 4				100
NO. 10	0.4	0.8		99.2
NO. 20	1.2	2.4		96.8
NO. 40	0.6	1.2		95.6
NO. 60				
NO. 100	14.4	28.8		66.8
NO. 140				
NO. 200	8.5	19.2		47.6
PAN	20.7	49.6		0
TOTAL	50.0	100.0		
REMARKS _____				

GRAIN SIZE CHART

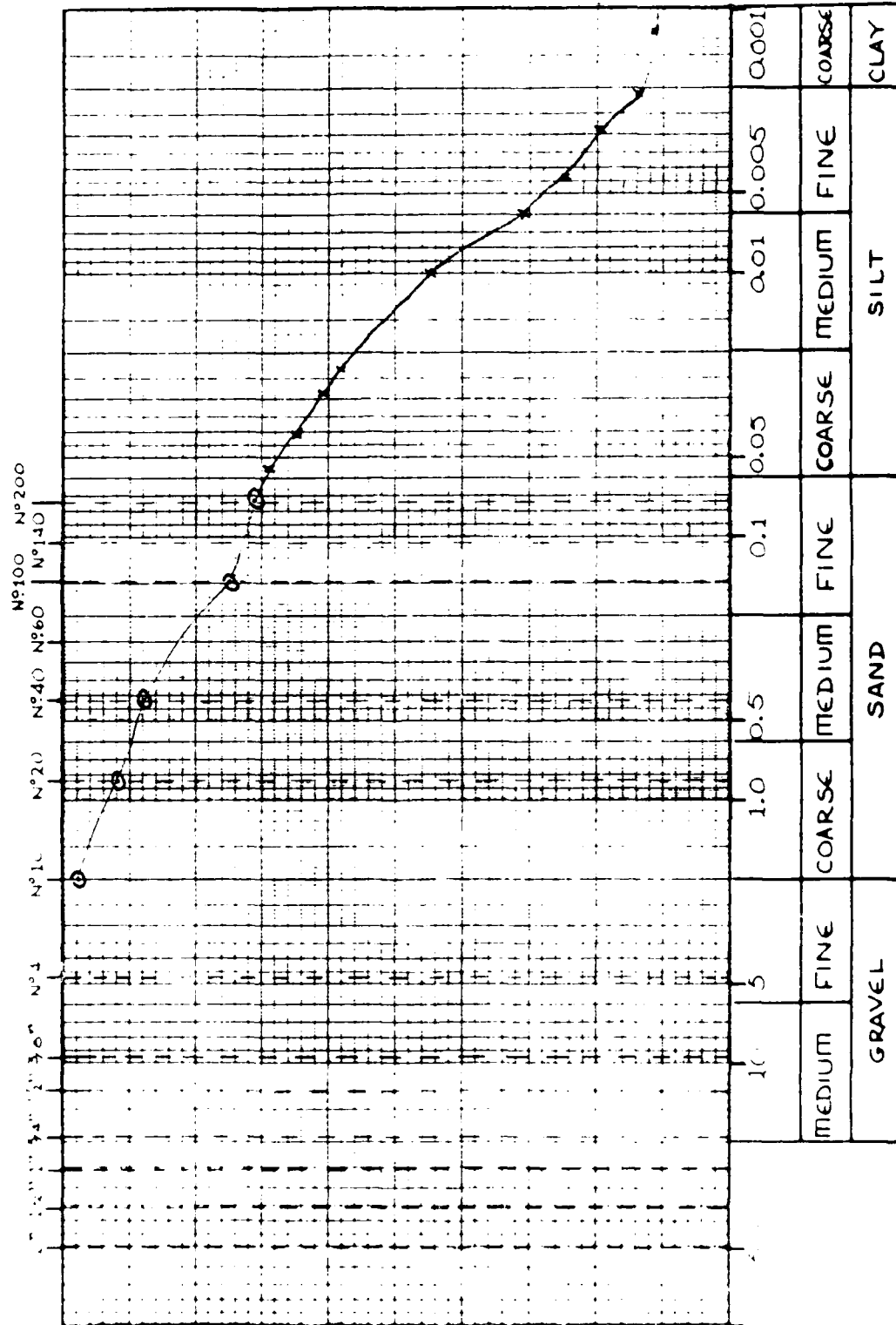
FILE NO: 1604-1
 SAMPLE NO: RB 12
 DATE: 146-145
 BY:

GRAVEL	2	%
SAND	29	%
SILT	56	%
CLAY	13	%

DESCRIPTION:

COMMENTS:

- SIEVE SIZES -



M.I.T. CLASSIFICATION
 - GRAIN SIZE (mm) -

% FINER BY WEIGHT

RB-12

140-105

FILE NO: _____

SAMPLE NO: _____

DATE: _____

BY: _____

HYDROMETER ANALYSIS

1240

ASTM D 422-63

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R _H	TEMP. °C	R _H = R _H + (C _m C _d)	DIA- METER (mm)	L	K	N (%)	N ₁ (%)
		1/2	34	-	34.4	0.057	10.5	0.024	68.8	
		1	32	-	32.4	0.041	10.9	"	64.8	
		2	30	-	30.4	0.029	11.2	"	60.8	
		3	28.5	28	28.9	0.024	11.4	"	57.8	
		19	22	-	22.4	0.010	12.5	"	44.8	
		57	15	28	15.4	0.0060	13.7	"	30.8	
		113	12.5	27	12.5	0.0044	14.0	0.026	25.0	
	0530	290	10.0	26	9.6	0.0028	14.5	0.027	19.2	
	1400	805	7.0	27	7.0	0.0021	15.0	0.026	14	
		26 hrs	6.0	27	6.0	0.0012	15.2	"	12	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____MENISCUS CORRECTION, C_m: _____DISPERSING AGENT CORRECTION, C_d: _____DRY WEIGHT OF SOIL, U_s: _____

% < N#60 SIEVE: _____

$$N_1 = \left(\frac{\% < N\#60}{100} \right) N = \text{_____} N \text{ (COMBINED ANALYSIS)}$$

$$N = R \frac{G}{G-1} \times \frac{100}{U_s} = R \text{ _____}$$

REMARKS: _____

RB - 12
140 - 145

FILE NO: _____
SAMPLE NO: _____
DATE: _____
BY: _____

- SIEVE ANALYSIS -

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT	
			RETAINED	PASSING
3 IN.				
2 1/2 IN.				
2 IN.				
1 1/2 IN.				
1 IN.				
3/4 IN.				
1/2 IN.				
3/8 IN.				
NO. 4				100.0
NO. 10	1.1	2.2		97.8
NO. 20	3.0	6.0		91.8
NO. 40	2.2	4.0		87.8
NO. 60				
NO. 100	6.2	12.4		75.4
NO. 140				
NO. 200	2.3	4.6		70.8
PAN	35.4	70.8		
TOTAL	50.0	100.0		
REMARKS _____				

GRAIN SIZE CHART

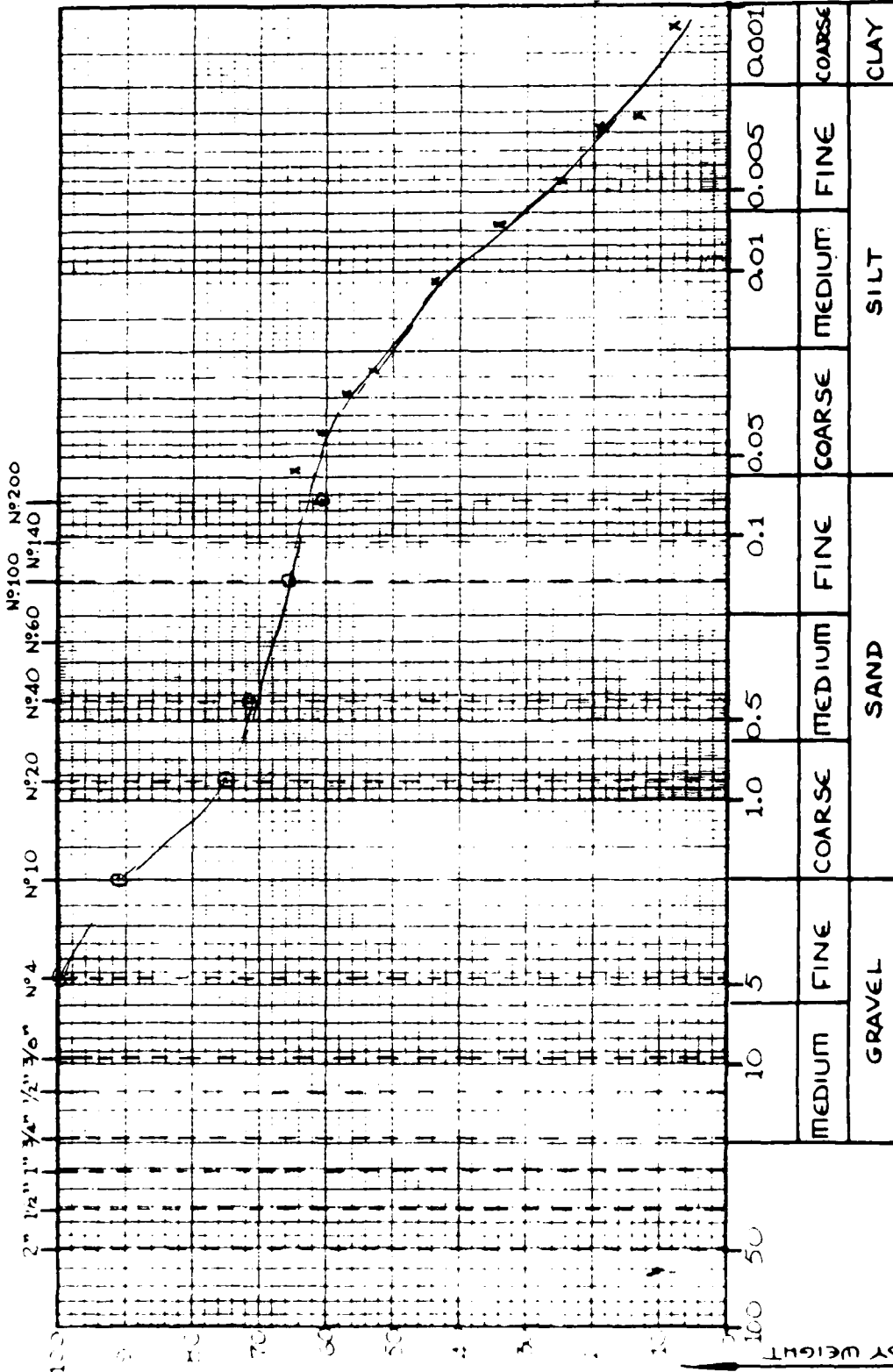
FILE NO: 1604-1
 SAMPLE NO: RB-12
 DATE: 70-180
 BY:

GRAVEL	%
SAND	%
SILT	%
CLAY	%

DESCRIPTION:

COMMENTS

- SIEVE SIZES -



U.S.T. CLASSIFICATION
 - GRAIN SIZE (mm) -

RB-1✓

170-180

FILE NO: _____

SAMPLE NO: _____

DATE: _____

BY: _____

HYDROMETER ANALYSIS

.175

ASTM. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R _H	TEMP. °C	R _H = R _H + (C _m C _d)	DIA- METER (mm)	L	K	N (%)	N ₁ (%)
		1/4	32		32.4	.057	10.9	.0124	64.8	
		1	30		30.4	.041	11.2	"	60.8	
		2	28		28.4	.029	11.5	"	56.8	
		3	26	28	26.4	.024	11.9	"	52.8	
		15	21.8	"	22.2	.011	12.5	"	44.4	
		45	16.5	"	16.9	.0067	13.4	"	33.8	
		103	12.5	27	12.5	.0046	13.9	.0126	25.0	
	0530	295	10.0	26	9.6	.0029	14.5	.0127	19.2	
	1400	790	6.5	27	6.5	.0017	15.1	.0126	13.0	
		26hr.	4.0	27	4.0	.0012	15.5	.0126	8	

DESCRIPTION: _____

SPECIFIC GRAVITY γ_s ; G_s : ASSUMED = _____; CALCULATED = _____MENISCUS CORRECTION, C_m : _____DISPERSING AGENT CORRECTION, C_d : _____DRY WEIGHT OF SOIL, U_s : _____

% < N#60 SIEVE: _____

$$N_1 = \left(\frac{\% < N\#60}{100} \right) N = \text{_____} N \text{ (COMBINED ANALYSIS).}$$

$$N = R \frac{G}{G-1} \times \frac{100}{U_s} = R \text{ _____}$$

REMARKS: _____

RB-12
170'-180'

- SIEVE ANALYSIS -

FILE NO: _____
SAMPLE NO: _____
DATE: _____
BY: _____

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT	
			RETAINED	PASSING
3 IN.				
2 1/2 IN.				
2 IN.				
1 1/2 IN.				
1 IN.				
3/4 IN.				
1/2 IN.				
3/8 IN.				
NO. 4				100.0
NO. 10	2.3	8.6		91.4
NO. 20	2.2	16.0		75.4
NO. 40	1.2	3.6		71.8
NO. 60				
NO. 100	3.1	6.4		65.4
NO. 140				
NO. 200	2.7	5.4		60.0
PAN	30.0	60.0		0
TOTAL	50.0	100.0		
REMARKS _____				

GRAIN SIZE CHART

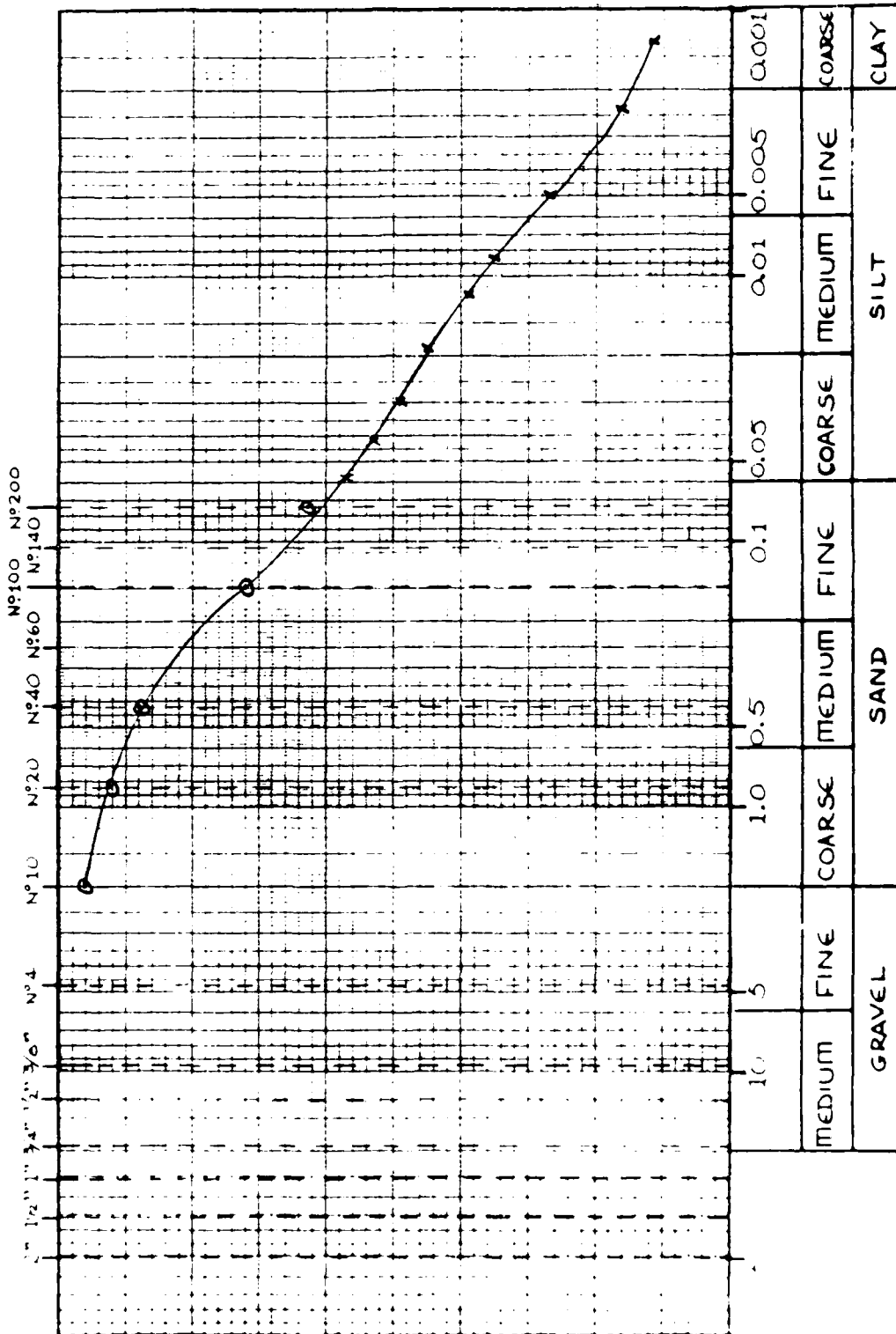
FILE NO: 1604-1
 SAMPLE NO: RB 12
 DATE: 180'-190'
 BY:

GRAVEL	4 %
SAND	38 %
SILT	43 %
CLAY	15 %

DESCRIPTION:

COMMENTS:

- SIEVE SIZES -



M.I.T. CLASSIFICATION
 - GRAIN SIZE (mm) -

% FINER BY WEIGHT

R13 -12

180-190

HYDROMETER ANALYSIS

FILE NO: _____
SAMPLE NO: _____
DATE: _____
BY: _____

.1240

ASTM. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R _H	TEMP. °C	R _H = R _H + (C _m C _d)	DIA- METER (mm)	L	K	N (%)	N ₁ (%)
		1/2	27	-	28.3	0.059	11.7	.0122	56.6	
		1	25	-	26.3	0.042	12.0	"	52.6	
		2	23	30	24.3	0.030	12.4	"	48.6	
		5	21	-	22.3	0.019	12.7	"	44.6	
		13	18	-	19.3	0.012	13.2	"	38.6	
	1:0	26	16	30	17.3	0.0088	13.5	"	34.6	
	2:00	86	12	30	13.3	0.0050	14.2	"	26.6	
	0750	430	9	25	8.1	0.0024	14.7	.0129	16.2	
		1440	6	27	6	0.0013	15.2	.0122	12.0	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, C_m: _____

DISPERSING AGENT CORRECTION, C_d: _____

DRY WEIGHT OF SOIL, U_s: _____

% < N°60 SIEVE: _____

$N_1 = \left(\frac{\% < N°60}{100} \right) N = \text{_____} N$ (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{U_s} = R \text{_____}$

REMARKS: _____

RB - 12
180 - 190

FILE NO: _____
SAMPLE NO: _____
DATE: _____
BY: _____

- SIEVE ANALYSIS -

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT	
			RETAINED	PASSING
3 IN.				
2 1/2 IN.				
2 IN.				
1 1/2 IN.				
1 IN.				
3/4 IN.				
1/2 IN.				
3/8 IN.				
NO. 4				100.0
NO. 10	2.9	4.6		95.4
NO. 20	1.7	3.2		92.2
NO. 40	2.3	5.5		86.7
NO. 60				
NO. 100	7.7	15.4		72.4
NO. 140				
NO. 200	4.6	9.2		63.2
PAN	31.5	63.2		
TOTAL	50.0	100.0		
REMARKS _____				

GRAIN SIZE CHART

FILE NO: _____

SAMPLE NO: RB 13-1

DATE: 95-100

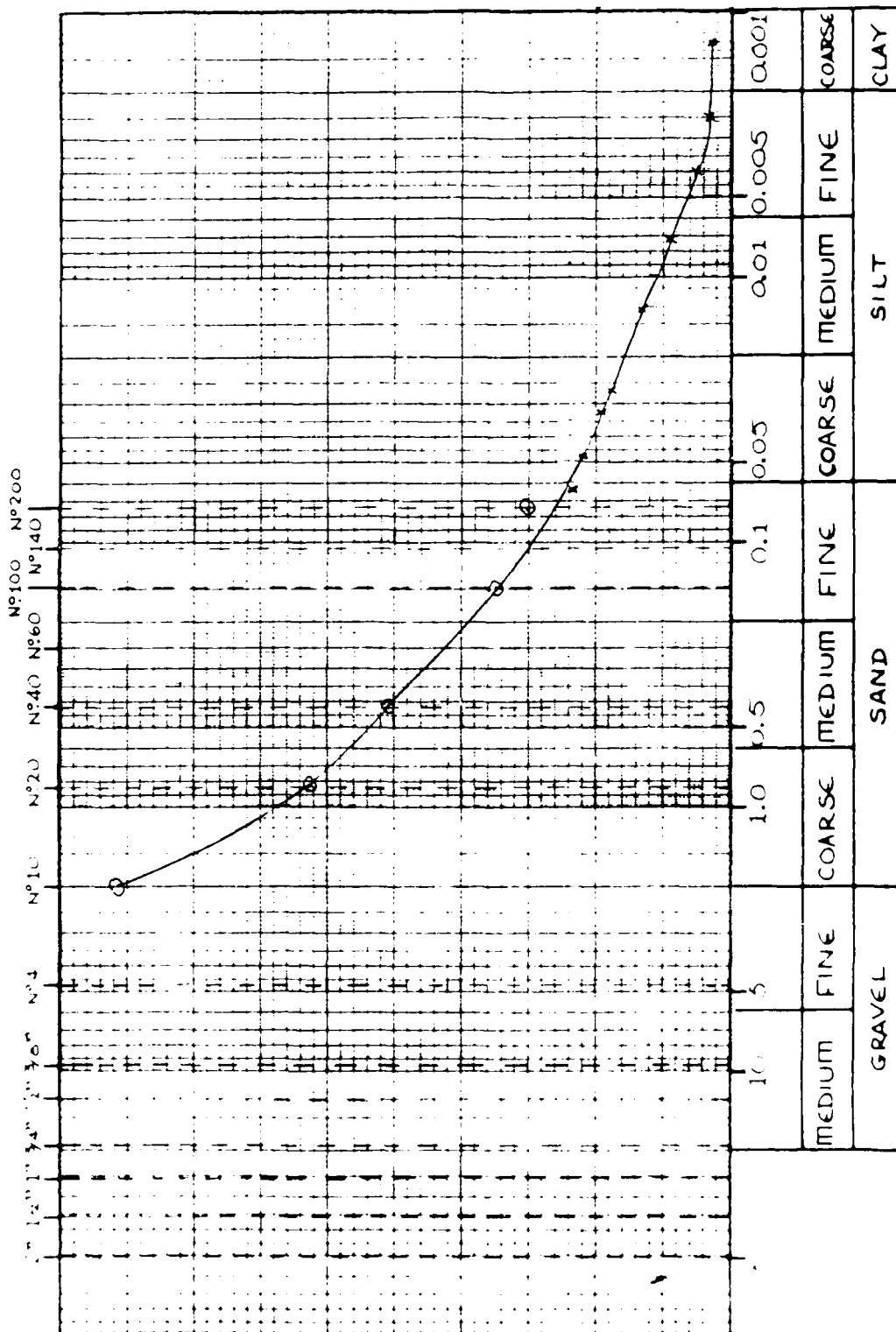
BY: _____

GRAVEL	11 %
SAND	67 %
SILT	21 %
CLAY	3 %

DESCRIPTION:

COMMENTS

- SIEVE SIZES -



M.I.T. CLASSIFICATION
- GRAIN SIZE (mm) -

% FINER BY WEIGHT

13-1

95-100

FILE NO: _____
 SAMPLE NO: _____
 DATE: _____
 BY: _____

HYDROMETER ANALYSIS

ASTM. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R _H	TEMP. °C	R _H = R _H + (C _m C _d)	DIA- METER (mm)	L	K	N (%)	N ₁ (%)
		1/2	11		11.9	0.066	14.3	.0133	23.8	
		1	10		10.9	0.047	14.5	"	21.8	
		2	9		9.9	0.033	14.7	"	19.8	
		3	8		8.9	0.027	14.8	"	17.8	
		14	6.0	29	6.9	0.013	15.2	"	13.8	
		46	3.5	-	4.4	0.0071	15.5	"	8.8	
		155	1.5	29	2.4	0.0040	16.0	"	4.8	
		395	1.5	29	1.5	0.0025	16.0	.0126	3.0	
		1356	1	28	1.4	0.0013	16.0	.0124	2.8	

DESCRIPTION: _____

SPECIFIC GRAVITY, G_s : ASSUMED = _____; CALCULATED = _____MENISCUS CORRECTION, C_m : _____DISPERSING AGENT CORRECTION, C_d : _____DRY WEIGHT OF SOIL, U_s : _____

% < N°60 SIEVE: _____

$$N_1 = \left(\frac{\% < N°60}{100} \right) N = \text{_____} N \text{ (COMBINED ANALYSIS).}$$

$$N = R \frac{G}{G-1} \times \frac{100}{U_s} = R \text{ _____}$$

REMARKS: _____

AD-A156 283

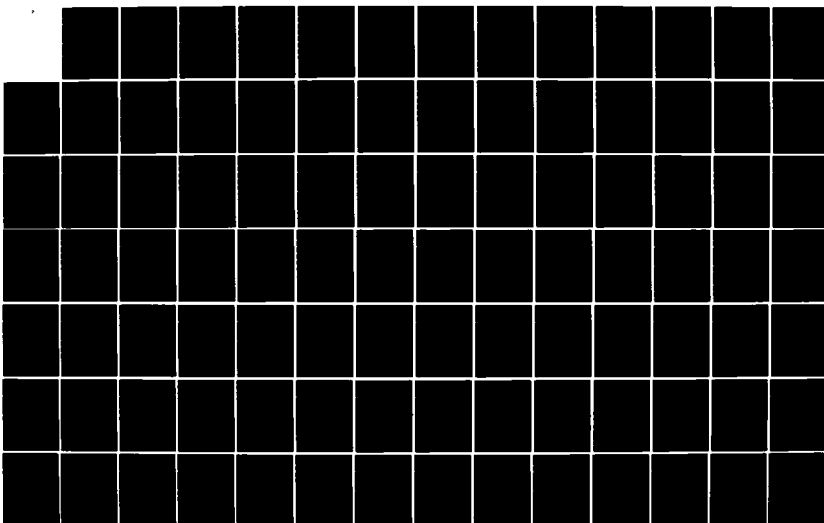
INSTALLATION RESTORATION PROGRAM PHASE II (STAGE 2-1)
VOLUME 2(U) RADIAN CORP AUSTIN TX R W BAUER MAY 85
F33615-83-D-4001

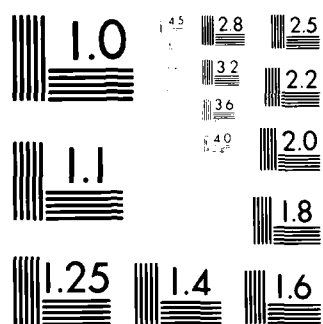
05/10

UNCLASSIFIED

F/G 13/2

NL





MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

13-1

95-100

FILE NO: _____

SAMPLE NO: _____

DATE: _____

BY: _____

- SIEVE ANALYSIS -

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT	
			RETAINED	PASSING
3 IN.				
2 1/2 IN.				
2 IN.				
1 1/2 IN.				
1 IN.				
3/4 IN.				
1/2 IN.				
3/8 IN.				
NO. 4				100.0
NO. 10	3.9	8.5		91.5
NO. 20	13.3	29.0		62.5
NO. 40	5.2	11.3		51.2
NO. 60				
NO. 100	7.4	16.2		35.0
NO. 140				
NO. 200	2.2	4.8		30.2
PAN	13.8	30.2		0
TOTAL	45.8	100.0		
REMARKS <u>Whole Sample Total wt = 45.8 gm</u>				

GRAIN SIZE CHART

FILE NO: _____

SAMPLE NO: RB 13-2

DATE: 115-120

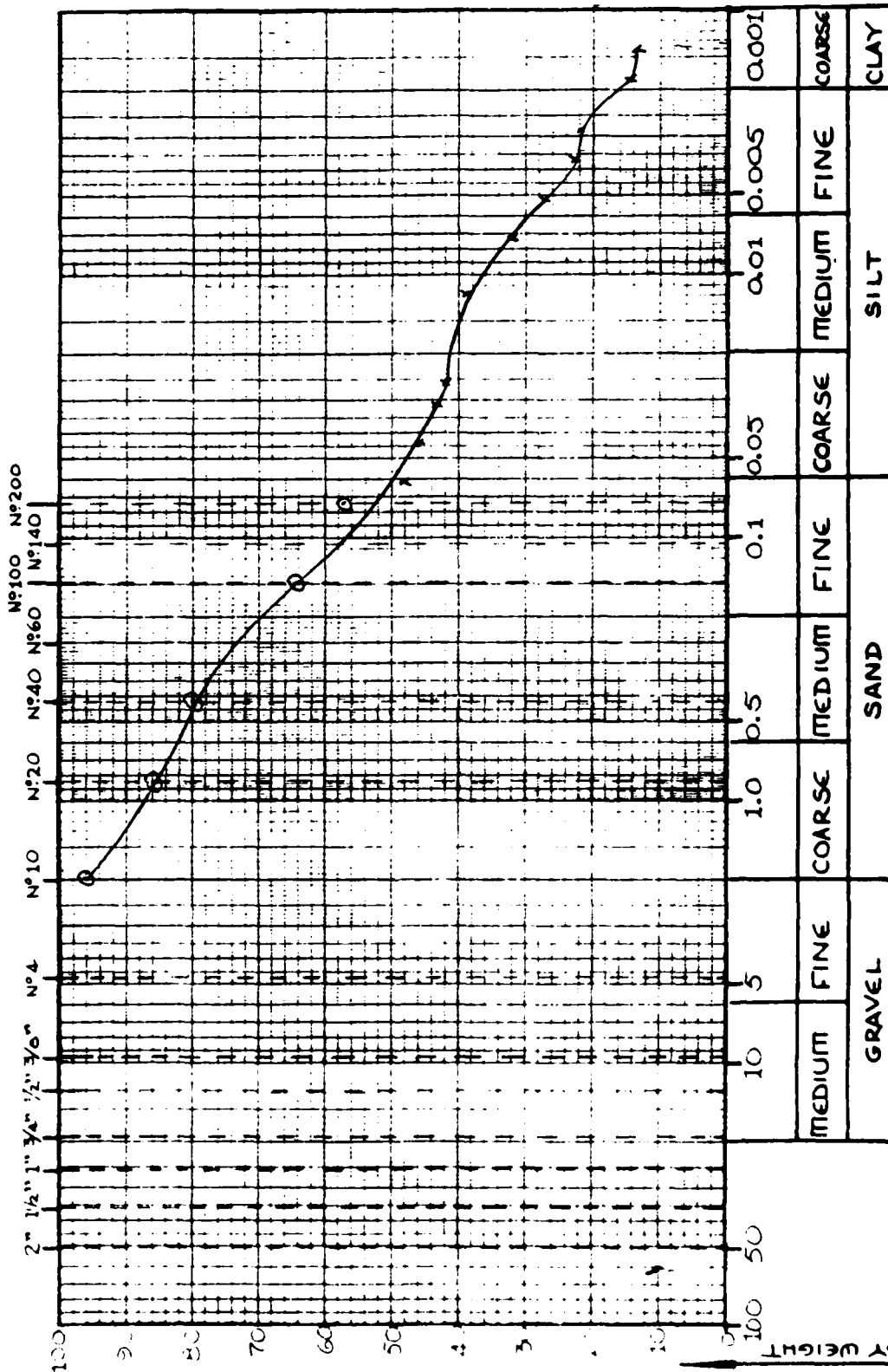
BY: _____

GRAVEL	4 %
SAND	46 %
SILT	34 %
CLAY	16 %

DESCRIPTION: _____

COMMENTS _____

- SIEVE SIZES -



U.S. STANDARD SIEVE SIZES -
- GRAIN SIZE (mm) -

% FINER BY WEIGHT

13-2

115-120'

FILE NO: _____

SAMPLE NO: _____

DATE: _____

BY: _____

HYDROMETER ANALYSIS

ASTM D 422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R _H	TEMP. °C	R _H + R _H + (CmCd)	DIA- METER (mm)	L	K	N (%)	N ₁ (%)
		1/2	24		24	0.062	12.0	.0126	48	
		1	23		23	0.044	12.4	"	46	
		2	22		22	0.032	12.5	"	44	
		3	21		21	0.026	12.7	"	42	
		14	19.5	27	19.5	0.012	12.9	"	39.0	
		40	16	—	16.0	0.0073	13.5	"	32	
		80	13.5	27	13.5	0.0052	13.9	"	27.0	
		160	12.0	26	11.6	0.0036	14.0	.0127	23.2	
		200	11.0	27	11.0	0.0028	14.3	.0126	22.0	
		280	9.0	24	7.7	0.0018	14.7	.0130	15.4	
		1140	7.0	27	7.0	0.0014	15.0	.0126	14.0	
		1360	6.5	26	6.1	0.0013	15.0	.0127	12.1	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____MENISCUS CORRECTION, C_m: _____DISPERSING AGENT CORRECTION, C_d: _____DRY WEIGHT OF SOIL, U_s: _____% < N^o 60 SIEVE: _____
$$N_1 = \left(\frac{\% < N^o 60}{100} \right) N = \text{_____} N \text{ (COMBINED ANALYSIS).}$$

$$N = R \frac{G}{G-1} \times \frac{100}{U_s} = R \text{ _____}$$

REMARKS: _____

13.2
115-120
96.39M

FILE NO: _____
SAMPLE NO: _____
DATE: _____
BY: _____

- SIEVE ANALYSIS -

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT	
			RETAINED	PASSING
3 IN.				
2 1/2 IN.				
2 IN.				
1 1/2 IN.				
1 IN.				
3/4 IN.				
1/2 IN.				
3/8 IN.				
NO. 4				100.0
NO. 10	1.8	2.13.9		97.9 96.1
NO. 20	4.7	10.1		87.8 86
NO. 40	2.7	5.8		82.6 80.2
NO. 60				
NO. 100	7.4	16.0		66.6 64.2
NO. 140				
NO. 200	3.2	6.9		57.1 57.2
PAN	26.5	59.2		0
TOTAL	46.3	100.0		
REMARKS <u>whole sample</u>				

GRAIN SIZE CHART

FILE NO:

SAMPLE NO: RB13-3

DATE: 135'-145'

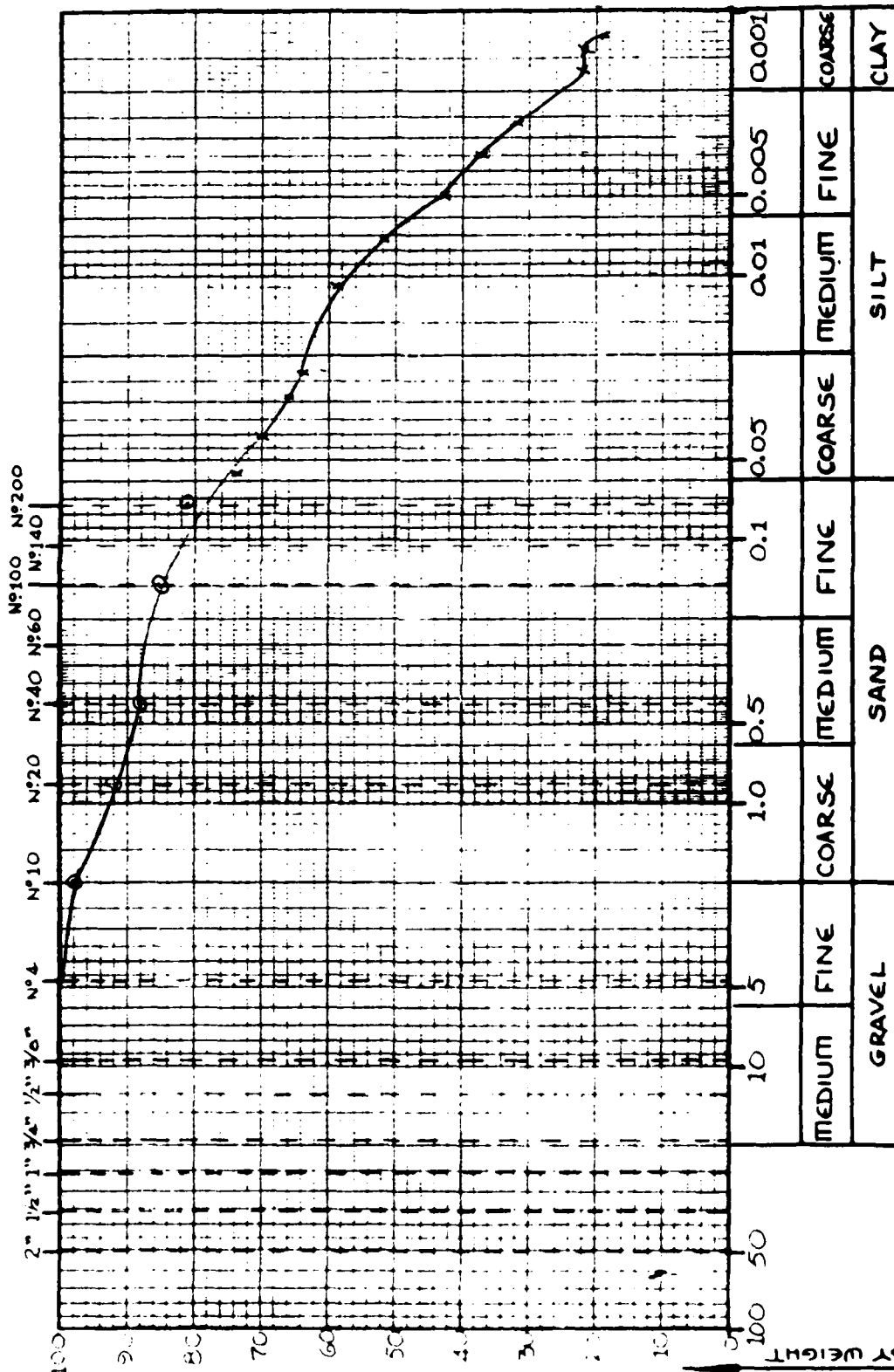
BY:

GRAVEL	2 %
SAND	22 %
SILT	51 %
CLAY	25 %

DESCRIPTION:

COMMENTS

- SIEVE SIZES -



U.S.T. CLASSIFICATION
- GRAIN SIZE (mm) -

GRAVEL	SAND			SILT			CLAY
MEDIUM FINE	COARSE	MEDIUM	FINE	COARSE	MEDIUM	FINE	COARSE

13-3
135'-145'

FILE NO:	
SAMPLE NO:	
DATE:	
BY:	

HYDROMETER ANALYSIS

AST.M. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R _H	TEMP. °C	R _H = R _H + (C _m C _d)	DIA- METER (mm)	L	K	N (%)	N ₁ (%)
		1/2	37		37	0.057	10.1	.0126	74	
		1	35		35	0.041	10.4	"	70	
		2	33		33	0.029	10.7	"	66	
		3	32		32	0.024	10.9	"	64	
		14	29.5	27	29.5	0.011	11.2	"	59	
		36	26	-	26	0.0072	11.9	"	52	
		80	22.5	27	22.5	0.0050	12.4	"	43	
		145	19	26	18.6	0.0035	13.0	.0127	37.2	
		300	16	27	16	0.0027	13.5	.0126	32	
		775	13.5	24	12.2	0.0017	13.9	.0130	24.4	
		1135	11.0	27	11.0	0.0014	14.3	.0126	22.0	
		1355	10.0	26	9.6	0.0013	14.5	.0127	19.2	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, C_m: _____

DISPERSING AGENT CORRECTION, C_d: _____

DRY WEIGHT OF SOIL, U_s: _____

% < N₆₀ SIEVE: _____

$N_1 = \left(\frac{\% < N_{60}}{100} \right) N = \text{_____} N$ (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{U_s} = R \text{_____}$

REMARKS: _____

13-3
135'-145'

FILE NO: _____
SAMPLE NO: _____
DATE: _____
BY: _____

- SIEVE ANALYSIS -

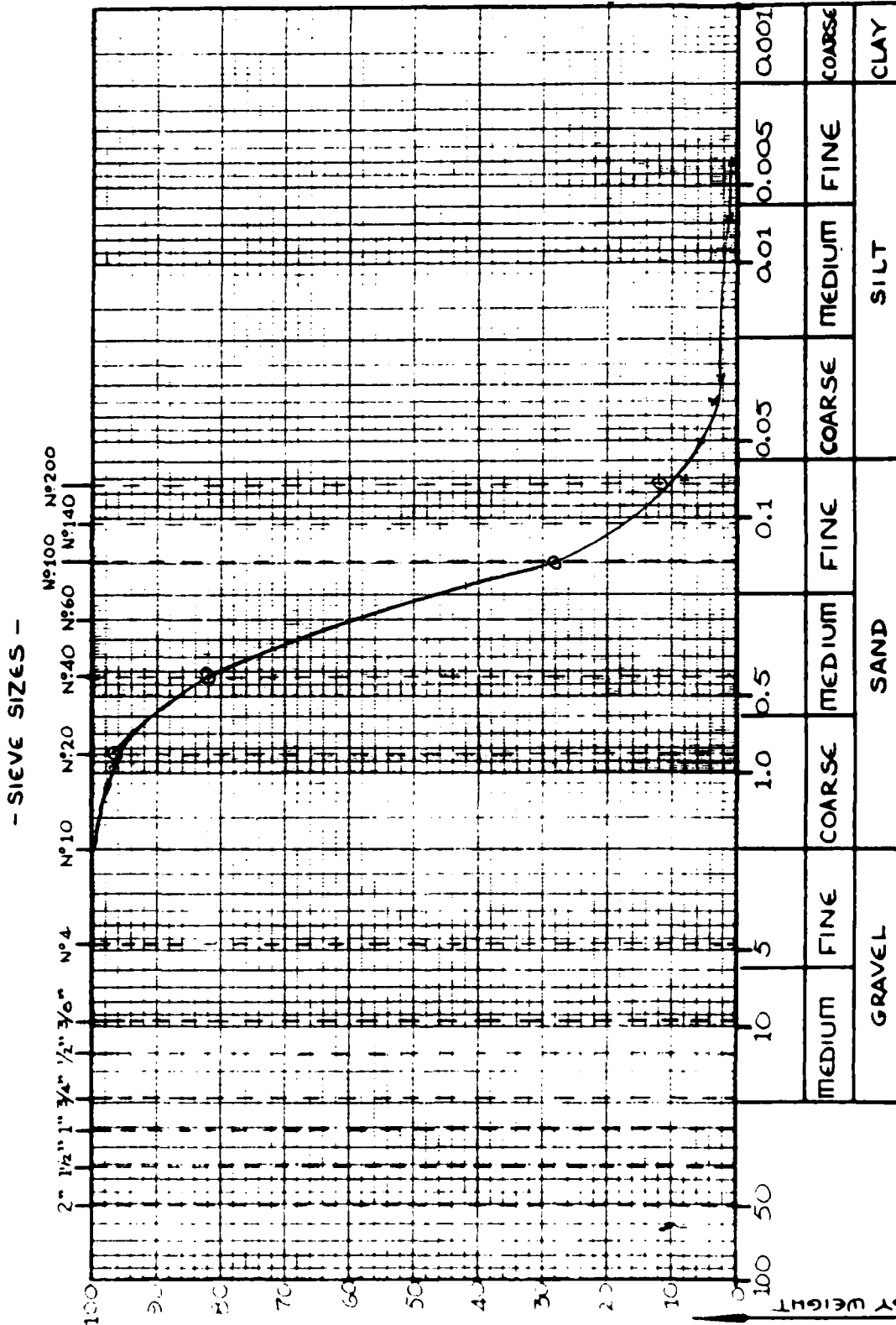
SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT	
			RETAINED	PASSING
3 IN.				
2 1/2 IN.				
2 IN.				
1 1/2 IN.				
1 IN.				
3/4 IN.				
1/2 IN.				
3/8 IN.				
NO. 4				
NO. 10	1.2			
NO. 20	3.0			
NO. 40	2.0			
NO. 60				
NO. 100	1.5			
NO. 140				
NO. 200	2.0			
PAN				
TOTAL	50.0			
REMARKS _____				

GRAIN SIZE CHART

FILE NO: _____
 SAMPLE NO: RB 13-4
 DATE: 145-200
 BY: _____

GRAVEL	%
SAND	92%
SILT	8%
CLAY	%

DESCRIPTION: _____
 COMMENTS: _____



U.S.T. CLASSIFICATION
 - GRAIN SIZE (mm) -

145-200

FILE NO:

SAMPLE NO:

DATE:

BY:

HYDROMETER ANALYSIS

A.S.T.M. D 422-63.

[illegible]

DESCRIPTION: _____

SPECIFIC GRAVITY ; G_s : ASSUMED = _____ ; CALCULATED = _____

MENISCUS CORRECTION, C_m : _____

DISPERSING AGENT CORRECTION, Cd: _____

DRY WEIGHT OF SOIL, W_s : _____.

% < N° 60 SIEVE : _____.

$$N_1 = \left(\frac{\% < N^{\circ} 60}{100} \right) N = \text{_____} N \text{ (COMBINED ANALYSIS).}$$

$$N = R \frac{G}{G-1} \times \frac{100}{U_s} = R \underline{\hspace{2cm}}.$$

REMARKS: _____

13-4

195-200

FILE NO: _____

SAMPLE NO: _____

DATE: _____

BY: _____

- SIEVE ANALYSIS -

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT	
			RETAINED	PASSING
3 IN.				
2 1/2 IN.				
2 IN.				
1 1/2 IN.				
1 IN.				
3/4 IN.				
1/2 IN.				
3/8 IN.				
NO. 4				
NO. 10	0	0		100.0
NO. 20	1.3	2.6		97.4
NO. 40	7.5	15.0		82.4
NO. 60				
NO. 100	27.2	54.4		28.0
NO. 140				
NO. 200	8.2	16.4		11.6
PAN	5.8	11.6		
TOTAL	50.0	100.0		
REMARKS _____				

GRAIN SIZE CHART

FILE NO:

SAMPLE NO: RB 14-1

DATE: 80-85

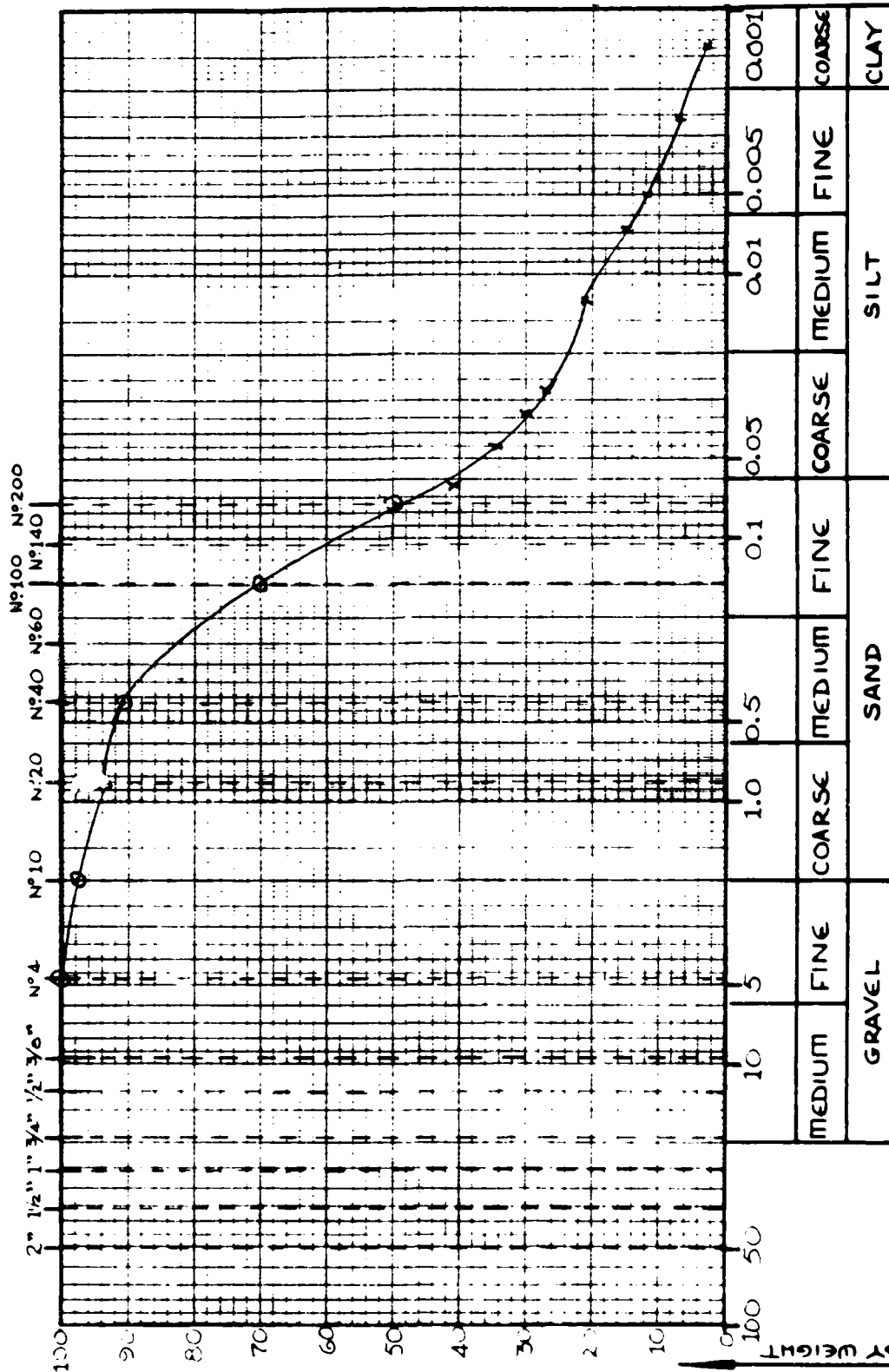
BY:

GRAVEL	2 %
SAND	56 %
SILT	36 %
CLAY	6 %

DESCRIPTION:

COMMENTS

- SIEVE SIZES -



M.I.T. CLASSIFICATION
- GRAIN SIZE (mm) -

% FINER BY WEIGHT

80-85

BY:

HYDROMETER ANALYSIS

A.S.T.M. D 422-63.

[illegible]

DESCRIPTION:

SPECIFIC GRAVITY; G_s : ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, C_m : _____

DISPERSING AGENT CORRECTION, Cd: _____

DRY WEIGHT OF SOIL, W_s : _____.

% < N° 60 SIEVE : _____.

$$N_1 = \left(\frac{\% < N^{\circ}60}{100} \right) N = \underline{\hspace{2cm}} N \text{ (COMBINED ANALYSIS).}$$
$$N = R \frac{G}{G-1} \times \frac{100}{U_s} = R \underline{\hspace{2cm}}.$$

REMARKS: _____

22-1-
30-45
-SIEVE ANALYSIS-

FILE NO: _____
SAMPLE NO: _____
DATE: _____
BY: _____

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT	
			RETAINED	PASSING
3 IN.				
2 1/2 IN.				
2 IN.				
1 1/2 IN.				
1 IN.				
3/4 IN.				
1/2 IN.				
3/8 IN.				
NO. 4				100.0
NO. 10		1.8		98.2
NO. 20		3.9		96.3
NO. 40		3.7		92.6
NO. 60				
NO. 100	7.5	20.8		69.8
NO. 140				
NO. 200		20.1		49.7
PAN	22.7	49.7		
TOTAL	45.7	100.0		
REMARKS _____				

GRAIN SIZE CHART

FILE NO: _____

SAMPLE NO: RB 14-2

DATE: 120-140

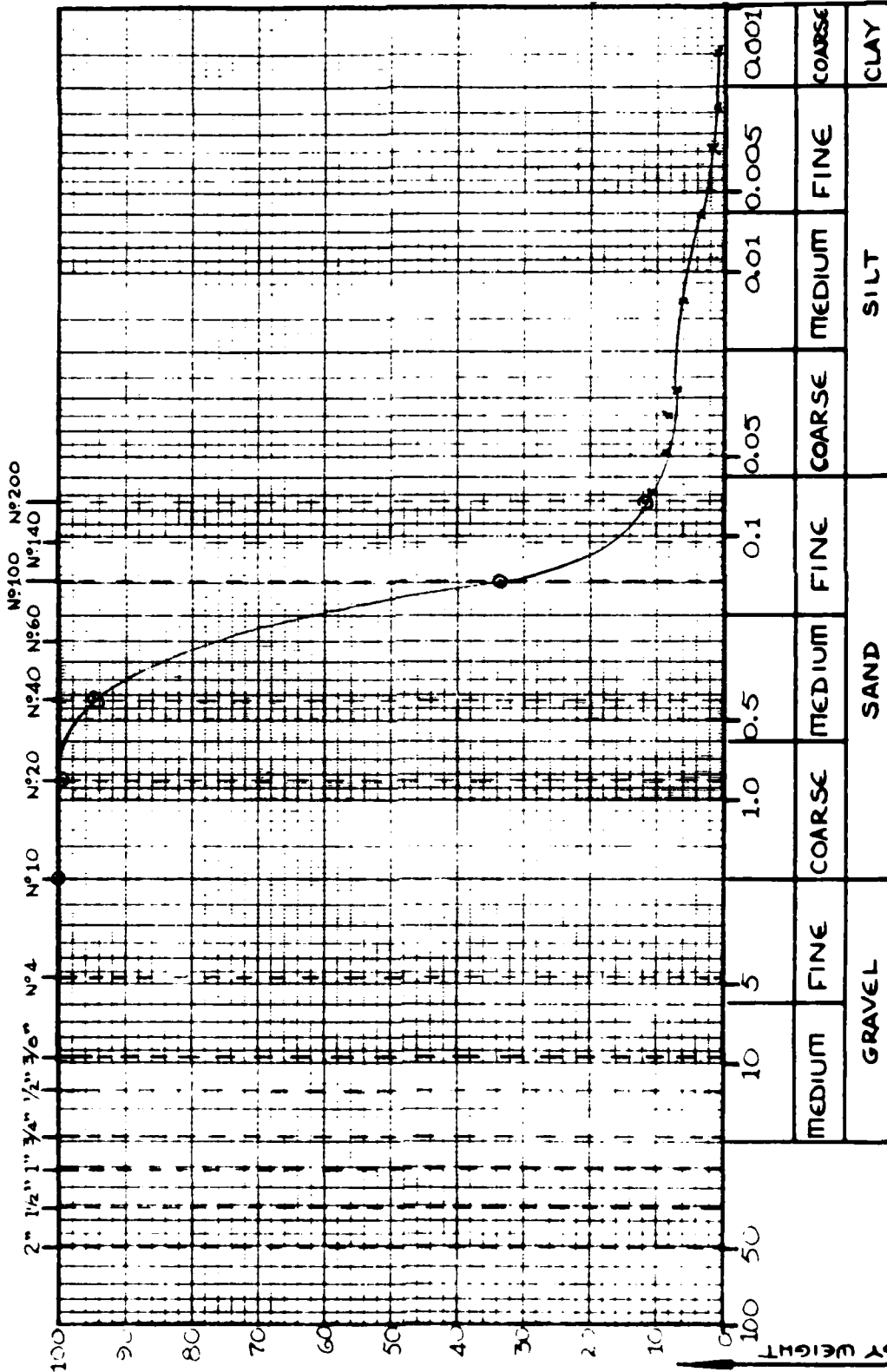
BY: _____

GRAVEL	%
SAND	91%
SILT	8%
CLAY	1%

DESCRIPTION: _____

COMMENTS: _____

- SIEVE SIZES -



M.I.T. CLASSIFICATION
- GRAIN SIZE (mm) -

RB 14-2

120-140

FILE NO: _____

SAMPLE NO: _____

DATE: _____

BY: _____

HYDROMETER ANALYSIS

AST.M. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R _H	TEMP. °C	R _H = R _H + (C _m C _d)	DIA- METER (mm)	L	K	N (%)	N ₁ (%)
		11/2	5		5.4	0.069	15.3	0.044	10.8	
		1	4		4.4	0.049	15.5	"	8.8	
		2	3.5		3.9	0.035	15.6	"	7.8	
		3	3	28	3.4	0.028	15.6	"	6.8	
		14	2.7	—	3.1	0.013	15.6	"	6.2	
		65	1.5	28	1.9	0.0061	15.9	"	3.8	
		125	1.2	26.5	1.0	0.0034	16.0	0.027	2.0	
		465	1.5	25	0.6	0.0024	15.9	0.024	1.2	
		1125	0.5	27	0.5	0.0015	16.0	0.026	1.0	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s : ASSUMED = _____; CALCULATED = _____MENISCUS CORRECTION, C_m : _____DISPERSING AGENT CORRECTION, C_d : _____DRY WEIGHT OF SOIL, U_s : _____

% < N°60 SIEVE: _____

 $N_1 = \left(\frac{\% < N°60}{100} \right) N = \text{_____} N$ (COMBINED ANALYSIS). $N = R \frac{G}{G-1} \times \frac{100}{U_s} = R \text{_____}$

REMARKS: _____

LB 12-1

100-40

FILE NO: _____
SAMPLE NO: _____
DATE: _____
BY: _____

- SIEVE ANALYSIS -

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT	
			RETAINED	PASSING
3 IN.				
2 1/2 IN.				
2 IN.				
1 1/2 IN.				
1 IN.				
3/4 IN.				
1/2 IN.				
3/8 IN.				
NO. 4				
NO. 10	0			100.0
NO. 20	1.2	0.4		99.6
NO. 40	2.0	5.1		94.9
NO. 60				
NO. 100	30.5	61.0		38.6
NO. 140				
NO. 200	4.1	11.8		21.8
PAN	10.9	21.8		
TOTAL	50.0	100.0		
REMARKS _____				

GRAIN SIZE CHART

FILE NO:

SAMPLE NO: RB 14-3

DATE: 1-80-200

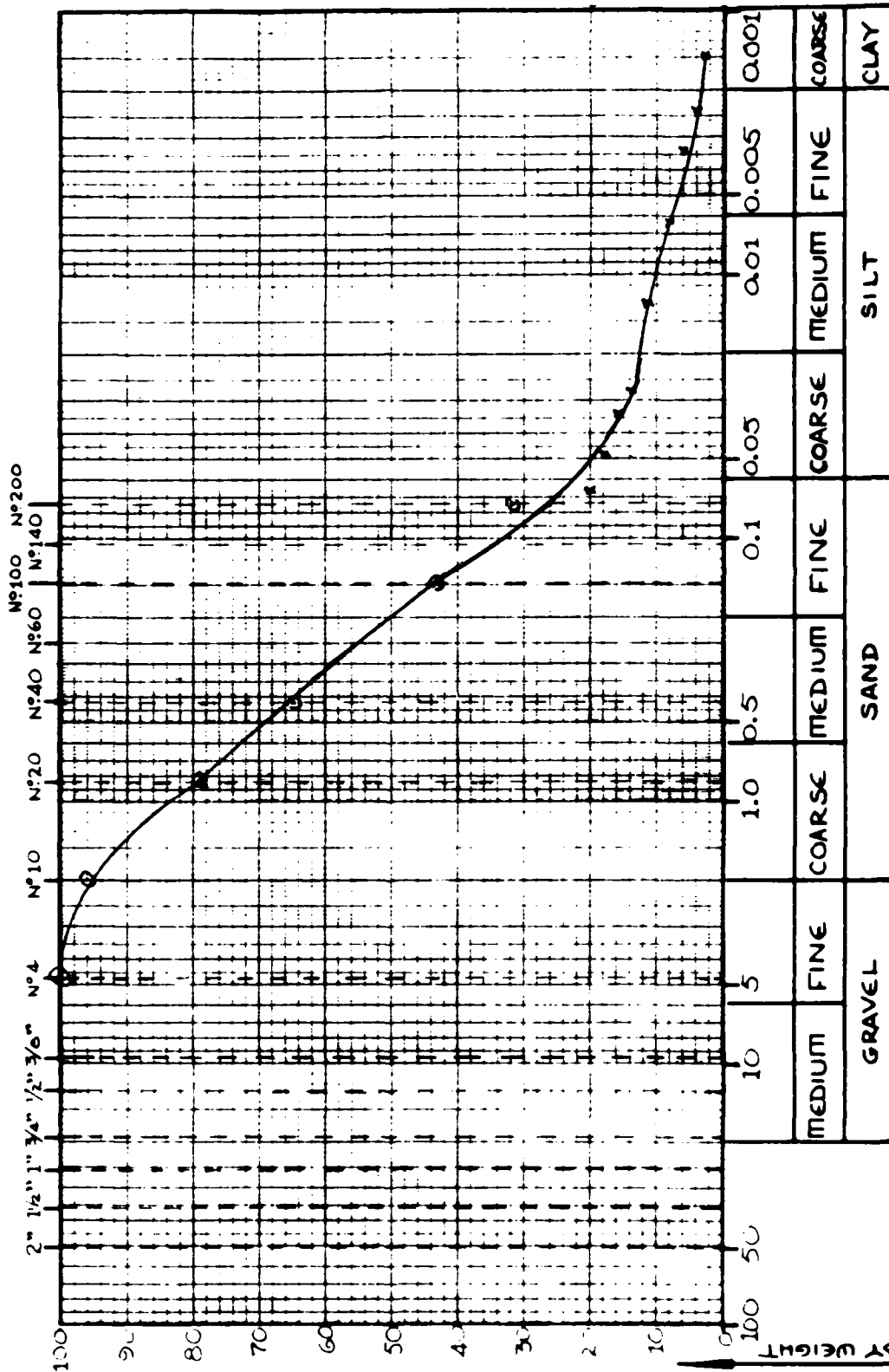
BY:

GRAVEL	4 %
SAND	74 %
SILT	19 %
CLAY	3 %

DESCRIPTION:

COMMENTS

- SIEVE SIZES -



U.S. CLASSIFICATION
- GRAIN SIZE (mm) -

RB 14-3

186-200

FILE NO: _____

SAMPLE NO: _____

DATE: _____

BY: _____

HYDROMETER ANALYSIS

AST.M. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R _H	TEMP. °C	R _H = R _H + (C _m C _d)	DIA- METER (mm)	L	K	N (%)	N' (%)
		1/2	9		9.4	0.067	14.7	0.024	19.8	
		1	9		8.4	0.048	14.6	"	17.8	
		2	7		7.4	0.034	15.0	"	15.8	
		3	6.5	28	6.9	0.028	15.1	"	13.8	
		14	5.5	—	5.9	0.013	15.2	"	11.8	
		60	3.5	28	3.9	0.0063	15.5	"	7.8	
		220	3.0	26.5	2.8	0.0034	15.6	0.027	5.6	
		460	3.0	25	2.1	0.0024	15.6	0.029	4.2	
		1120	1.5	27	1.5	0.0015	15.9	0.026	3.0	

DESCRIPTION: _____

SPECIFIC GRAVITY, G_s : ASSUMED = _____; CALCULATED = _____MENISCUS CORRECTION, C_m : _____DISPERSING AGENT CORRECTION, C_d : _____DRY WEIGHT OF SOIL, U_s : _____

% < N°60 SIEVE: _____

$$N_1 = \left(\frac{\% < N°60}{100} \right) N = \text{_____} N \text{ (COMBINED ANALYSIS).}$$

$$N = R \frac{G}{G-1} \times \frac{100}{U_s} = R \text{ _____}$$

REMARKS: _____

EB 14-3
180-200

FILE NO: _____
SAMPLE NO: _____
DATE: _____
BY: _____

- SIEVE ANALYSIS -

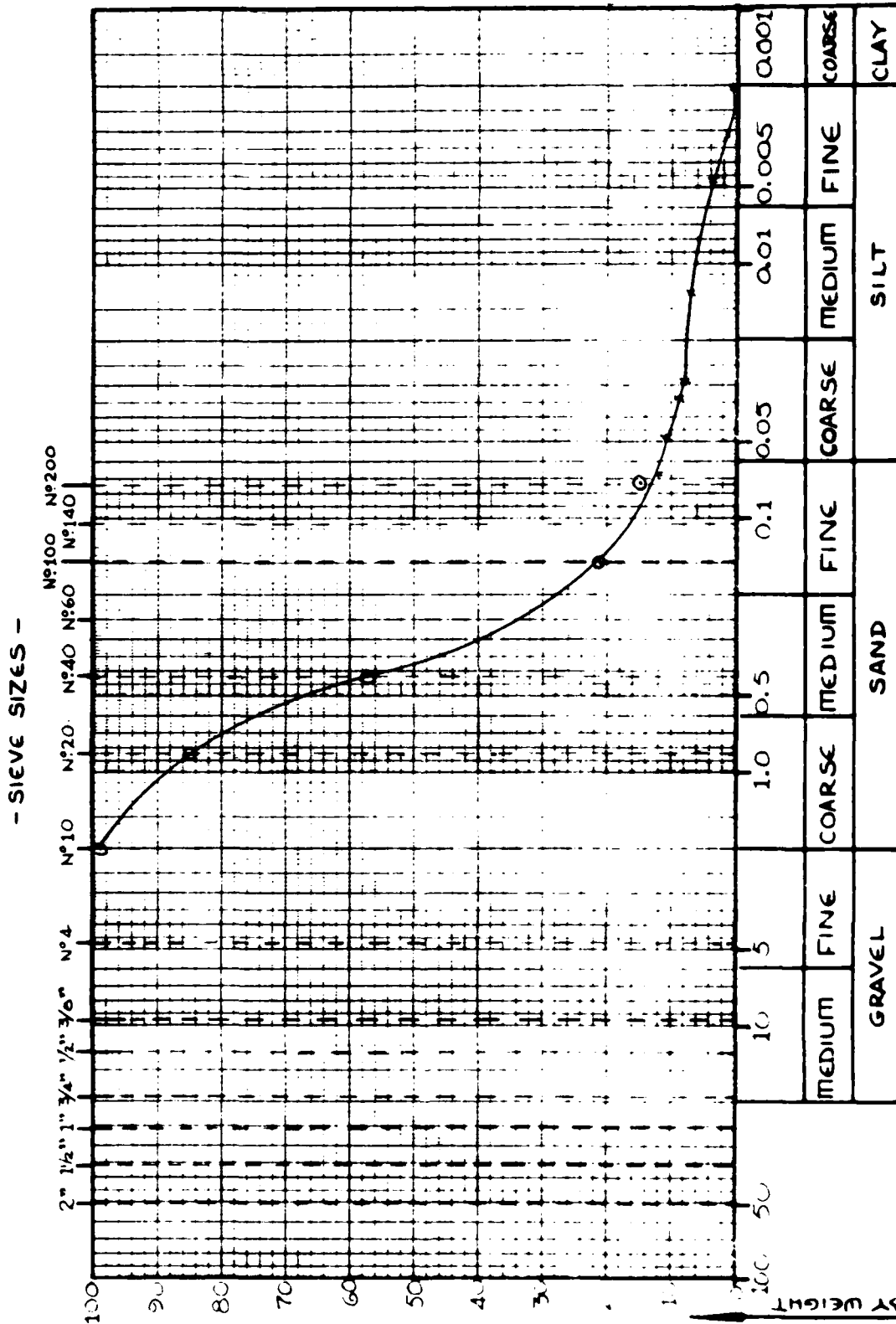
SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT	
			RETAINED	PASSING
3 IN.				
2 1/2 IN.				
2 IN.				
1 1/2 IN.				
1 IN.				
3/4 IN.				
1/2 IN.				
3/8 IN.				
NO. 4				100
NO. 10	1.1	3.2		96.8
NO. 20	2.5	17.6		82.4
NO. 40	7.0	44.0		56.0
NO. 60				
NO. 100	12.1	21.6		78.4
NO. 140				
NO. 200	4.4	10.8		89.2
PAN	16.1	32.2		
TOTAL	30.2	100		
REMARKS _____				

FILE NO: 1604-i
SAMPLE NO: 2B 15-1
DATE: 115'-120'
BY: _____

GRAVEL	%
SAND	88 %
SILT	12 %
CLAY	0 %

DESCRIPTION:

COMMENTS



M.I.T. CLASSIFICATION
-GRAIN SIZE (mm):-

15-1

115-120

FILE NO: _____

SAMPLE NO: _____

DATE: _____

BY: _____

HYDROMETER ANALYSIS

ASTM D422-63

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R _H	TEMP. °C	R _H + C _m C _d	DIA- METER (mm)	L	K	N (%)	N ₁ (%)
		1/2	5.5	—	.068	5.9	15.2	.0124	11.8	
		1	5.0	—	.048	5.4	15.3	"	10.8	
		2	4.0	—	.034	4.4	15.5	"	8.8	
		3	3.5	28	.028	3.9	15.6	"	7.8	
		14	3.0	—	.013	3.4	15.6	"	6.8	
		110	1.5	28	.0047	1.9	15.9	"	3.8	
	0100	230	0.7	27	.0033	0.7	16.0	.0126	1.4	
	0730	620	1.2	24.7	.0021	0.2	"	.0130	0.4	
	1930	1340	1.0	28	.0013		16.3	.0124		

DESCRIPTION: _____

SPECIFIC GRAVITY, G_s : ASSUMED = _____; CALCULATED = _____MENISCUS CORRECTION, C_m : _____DISPERSING AGENT CORRECTION, C_d : _____DRY WEIGHT OF SOIL, U_s : _____

% < N°60 SIEVE: _____

$$N_1 = \left(\frac{\% < N°60}{100} \right) N = \text{_____} N \text{ (COMBINED ANALYSIS)}$$

$$N = R \frac{G}{G-1} \times \frac{100}{U_s} = R \text{ _____}$$

REMARKS: _____

15-1
115-120

FILE NO: _____
SAMPLE NO: _____
DATE: _____
BY: _____

- SIEVE ANALYSIS -

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT	
			RETAINED	PASSING
3 IN.				
2 1/2 IN.				
2 IN.				
1 1/2 IN.				
1 IN.				
3/4 IN.				
1/2 IN.				
3/8 IN.				
NO. 4	- 0 -			100.0
NO. 10	0.6	1.2		98.8
NO. 20	7.0	14.0		84.8
NO. 40	13.8	27.6		57.2
NO. 60				
NO. 100	18.0	36.0		21.2
NO. 140				
NO. 200	3.0	6.0		15.2
PAN	7.6	15.2		0
TOTAL	100.0	100.0		
REMARKS _____				

GRAIN SIZE CHART

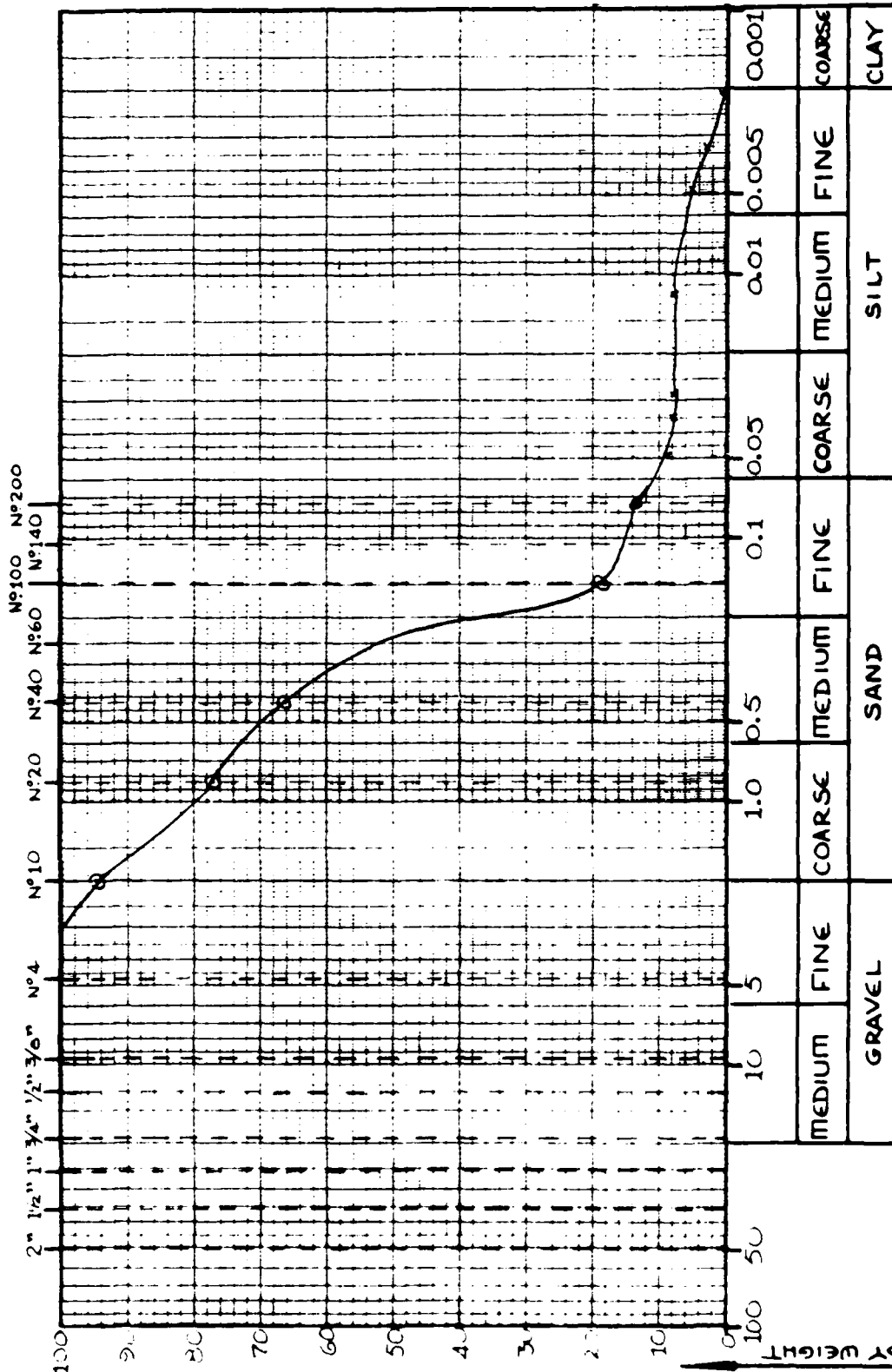
FILE NO: 1604-1
 SAMPLE NO: RB 15-2
 DATE: 180'-198'
 BY:

GRAVEL	5 %
SAND	84 %
SILT	11 %
CLAY	0 %

DESCRIPTION:

COMMENTS

- SIEVE SIZES -



M.I.T. CLASSIFICATION
 - GRAIN SIZE (mm) -

15-2

180-198

FILE NO: _____
 SAMPLE NO: _____
 DATE: _____
 BY: _____

HYDROMETER ANALYSIS

AST.M. D422-63

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R _H	TEMP. °C	R _H + R _H + (C _m C _d)	DIA- METER (mm)	L	K	N (%)	N ₁ (%)
		1/2	5.0	—	.1064	5.4	15.3	.0124	10.8	
		1	4.0	—	.1049	4.4	15.5	"	8.8	
		2	3.5	—	.1035	3.9	15.6	"	7.8	
		3	3.5	28	.028	3.9	15.6	"	7.8	
		17	3.5	—	.1012	3.9	15.6	"	7.8	
		106	2.0	28	.0048	2.4	15.8	"	4.8	
	0100	225	1.5	27	.0033	1.5	15.9	.0126	3.0	
	0730	615	1.2	24.7	.0021	0.2	16.0	.0130	0.4	
	1930	1335	-1.0	28				.0124		

DESCRIPTION: _____

SPECIFIC GRAVITY, G_s : ASSUMED = _____; CALCULATED = _____MENISCUS CORRECTION, C_m : _____DISPERSING AGENT CORRECTION, C_d : _____DRY WEIGHT OF SOIL, U_s : _____

% < N#60 SIEVE: _____

$$N_1 = \left(\frac{\% < N\#60}{100} \right) N = \text{_____} N \text{ (COMBINED ANALYSIS).}$$

$$N = R \frac{G}{G-1} \times \frac{100}{U_s} = R \text{ _____}$$

REMARKS: _____

15-2
150-191

FILE NO: _____
SAMPLE NO: _____
DATE: _____
BY: _____

- SIEVE ANALYSIS -

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT	
			RETAINED	PASSING
3 IN.				
2 1/2 IN.				
2 IN.				
1 1/2 IN.				
1 IN.				
3/4 IN.				
1/2 IN.				
3/8 IN.				
NO. 4	— 0 —			100.0
NO. 10	2.3	4.6		95.4
NO. 20	9.3	18.6		86.8
NO. 40	55	11.0		75.8
NO. 60				
NO. 100	23.7	47.4		28.4
NO. 140				
NO. 200	2.7	4.6		23.8
PAN	6.9	13.8		0
TOTAL	500	100.0		
REMARKS _____				

GRAIN SIZE CHART

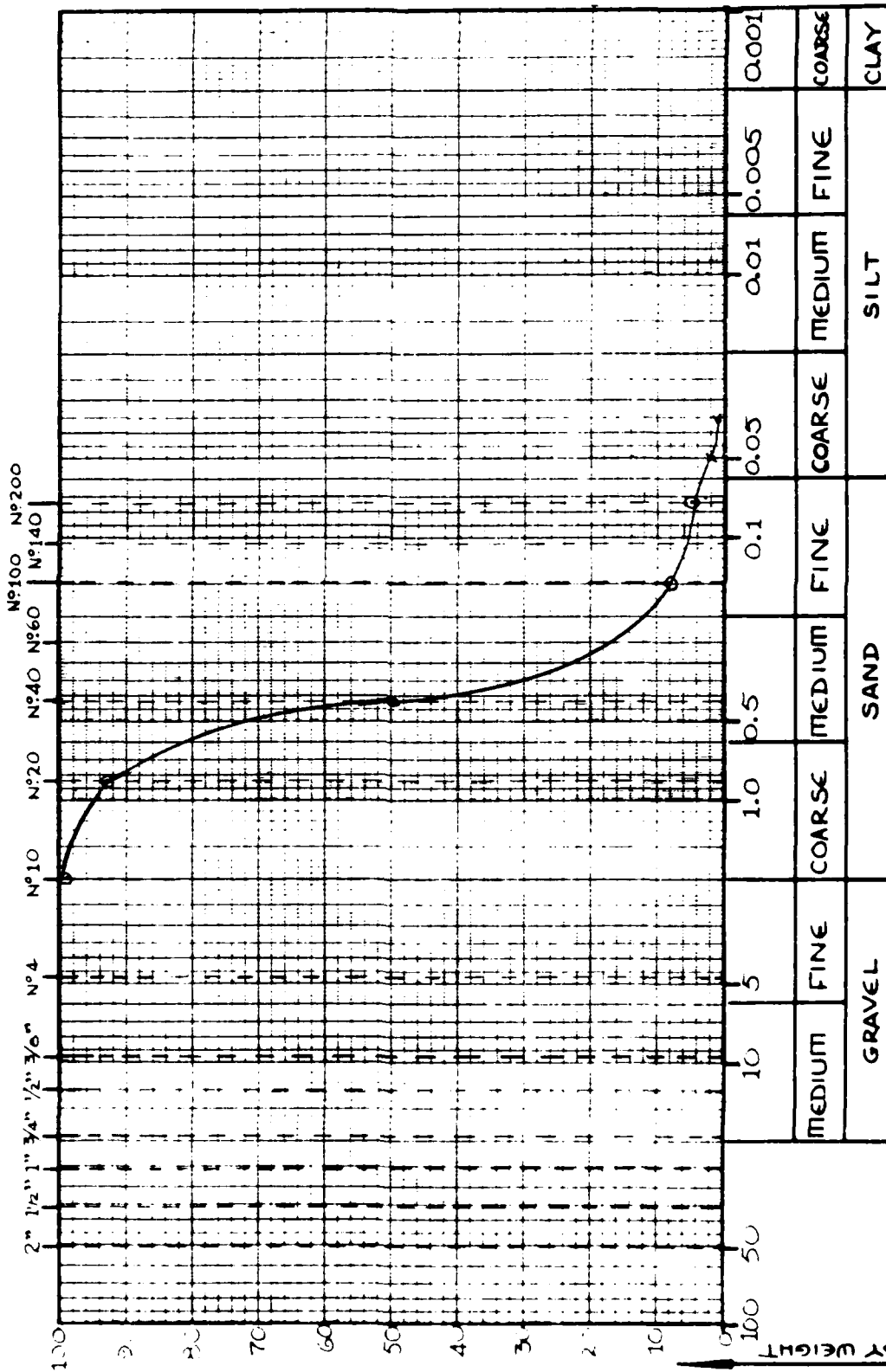
FILE NO: 1604-1
 SAMPLE NO: RB 15-3
 DATE: 198-200
 BY:

GRAVEL	%
SAND	96
SILT	4
CLAY	0

DESCRIPTION:

COMMENTS

- SIEVE SIZES -



U.S.T. CLASSIFICATION
 - GRAIN SIZE (mm) -

GRAVEL	SAND			SILT			CLAY
MEDIUM	FINE	COARSE	MEDIUM	FINE	COARSE	MEDIUM	CLAY

15-3

198-200

FILE NO: _____

SAMPLE NO: _____

DATE: _____

BY: _____

HYDROMETER ANALYSIS

ASTM D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R _H	TEMP. °C	R _H = R _H + (C _m C _d)	DIA- METER (mm)	L	K	N (%)	N ₁ (%)
		1/2	1.6	—	1.4	.070	16.0	.0124	2.8	
		1	0.5	—	0.9	.050	16.1	"	1.6	
		2	0.2	—	0.6	.035	16.1	"	1.2	
		3	0	28	0.4	.029	16.3	"	0.8	
		102	0	"	0.4	.0049	"	"	0.8	
	0100	220	0	27	0	.0034	"	.0126	0	
	0730	610	1.6	24.7		.0021	16.1	.0130		
	1930	1330	-1.0	28				.0124		

DESCRIPTION: _____

SPECIFIC GRAVITY, G_s : ASSUMED = _____; CALCULATED = _____MENISCUS CORRECTION, C_m : _____DISPERSING AGENT CORRECTION, C_d : _____DRY WEIGHT OF SOIL, U_s : _____

% < N°60 SIEVE: _____

$$N_1 = \left(\frac{\% < N°60}{100} \right) N = \text{_____} N \text{ (COMBINED ANALYSIS).}$$

$$N = R \frac{G}{G-1} \times \frac{100}{U_s} = R \text{ _____}$$

REMARKS: _____

15-3
198-200

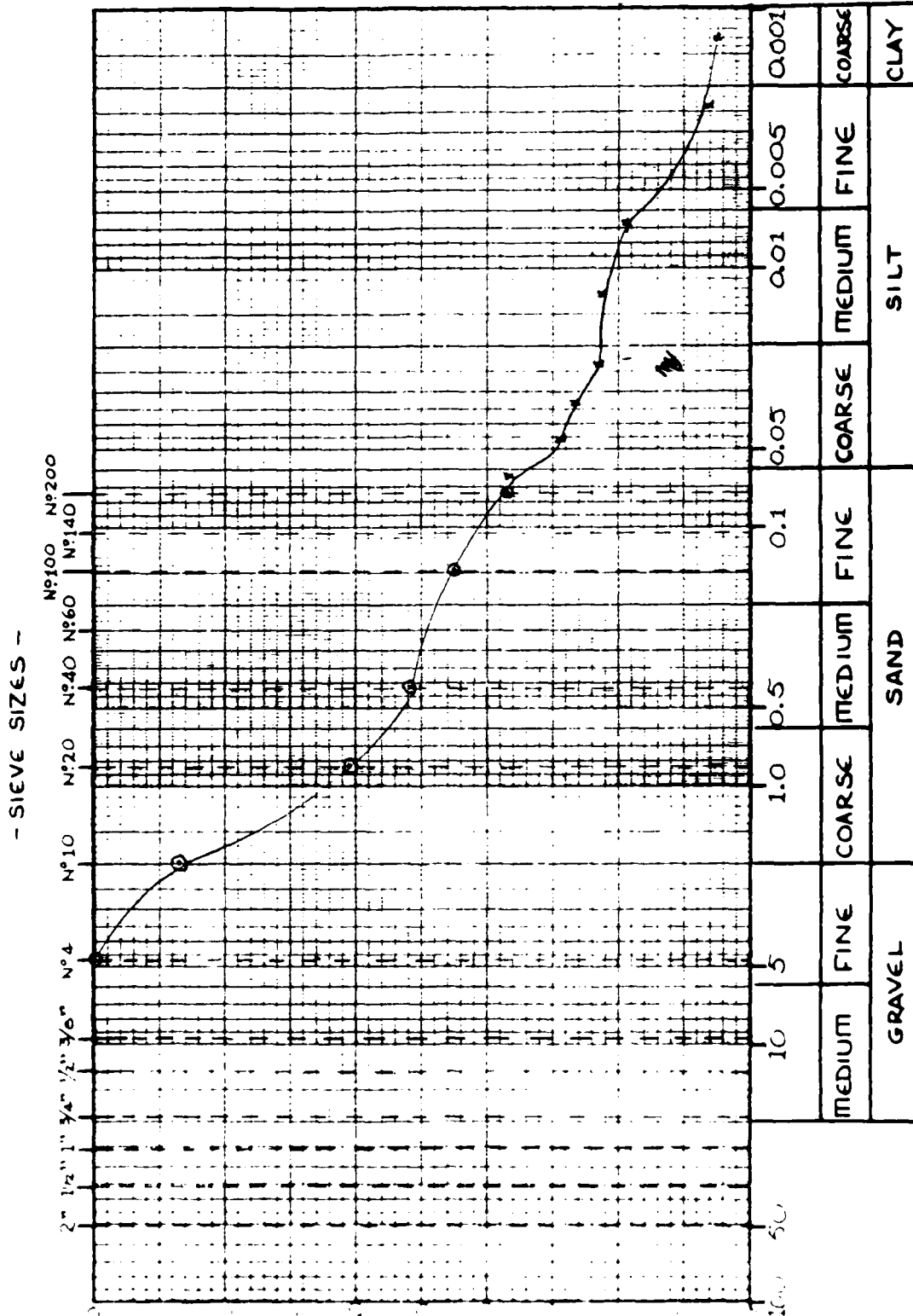
FILE NO: _____
SAMPLE NO: _____
DATE: _____
BY: _____

- SIEVE ANALYSIS -

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT	
			RETAINED	PASSING
3 IN.				
2 1/2 IN.				
2 IN.				
1 1/2 IN.				
1 IN.				
3/4 IN.				
1/2 IN.				
3/8 IN.				
NO. 4				100.0
NO. 10	0.4	0.8		99.2
NO. 20	3.0	6.0		93.2
NO. 40	21.6	43.2		50.0
NO. 60				
NO. 100	20.8	41.6		8.4
NO. 140				
NO. 200	1.8	3.6		4.8
PAN	2.4	4.8		✓
TOTAL	50.0	100.0		
REMARKS _____				

BY: AR

GRAVEL	13	%
SAND	65	%
SILT	28	%
CLAY	6	%



M.I.T. CLASSIFICATION
- GRAIN SIZE (mm) :-

DESCRIPTION:

COMMENTS

4. FINDER BY WEIGHT

RB16-1
90-102

FILE NO: _____
SAMPLE NO: _____
DATE: _____
BY: _____

HYDROMETER ANALYSIS

1210

AST.M. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R _H	TEMP. °C	R _H = R _H + (C _m C _d)	DIA- METER (mm)	L	K	N (%)	N ₁ (%)
		1/2	17	—	18.3	0.063	13.3	.0132	36.6	
		1	13	—	14.3	0.075	14.0	"	28.6	
		2	12	—	13.3	0.088	14.2	"	26.6	
		5		—				"		
		13	10	30	11.3	0.013	14.5	"	22.6	
		27	8	—	9.3	0.0067	14.8	"	18.6	
		60	5	—	6.3	0.0044	15.3	"	12.6	
	0750	460	4	25	3.1	0.0028	15.5	.0129	6.2	
		1440	2.5	27	2.5	0.0013	15.6	.0136	5.0	

DESCRIPTION: _____
 SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____
 MENISCUS CORRECTION, C_m: _____
 DISPERSING AGENT CORRECTION, C_d: _____
 DRY WEIGHT OF SOIL, U_s: _____
 % < N^o60 SIEVE: _____

$$N_1 = \left(\frac{\% < N^o 60}{100} \right) N = \text{_____} N \text{ (COMBINED ANALYSIS)}$$

$$N = R \frac{G}{G-1} \times \frac{100}{U_s} = R \text{ _____}$$

 REMARKS: _____

R3 16-
90-102

FILE NO: _____
SAMPLE NO: _____
DATE: _____
BY: _____

- SIEVE ANALYSIS -

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT	
			RETAINED	PASSING
3 IN.				
2 1/2 IN.				
2 IN.				
1 1/2 IN.				
1 IN.				
3/4 IN.				
1/2 IN.				
3/8 IN.				
NO. 4				100.0
NO. 10	6.6	13.2		86.8
NO. 20	12.8	25.6		74.2
NO. 40	4.4	8.8		65.4
NO. 60		-		
NO. 100	3.6	7.2		58.2
NO. 140				
NO. 200	4.1	8.2		50.0
PAN	18.5	37.0		
TOTAL	56.0	100.0		
REMARKS: <u>Whole Sample Taken, 50 g.</u>				

GRAIN SIZE CHART

FILE NO: 1604-1
 SAMPLE NO: RA 16-1
 DATE: 120-123
 BY:

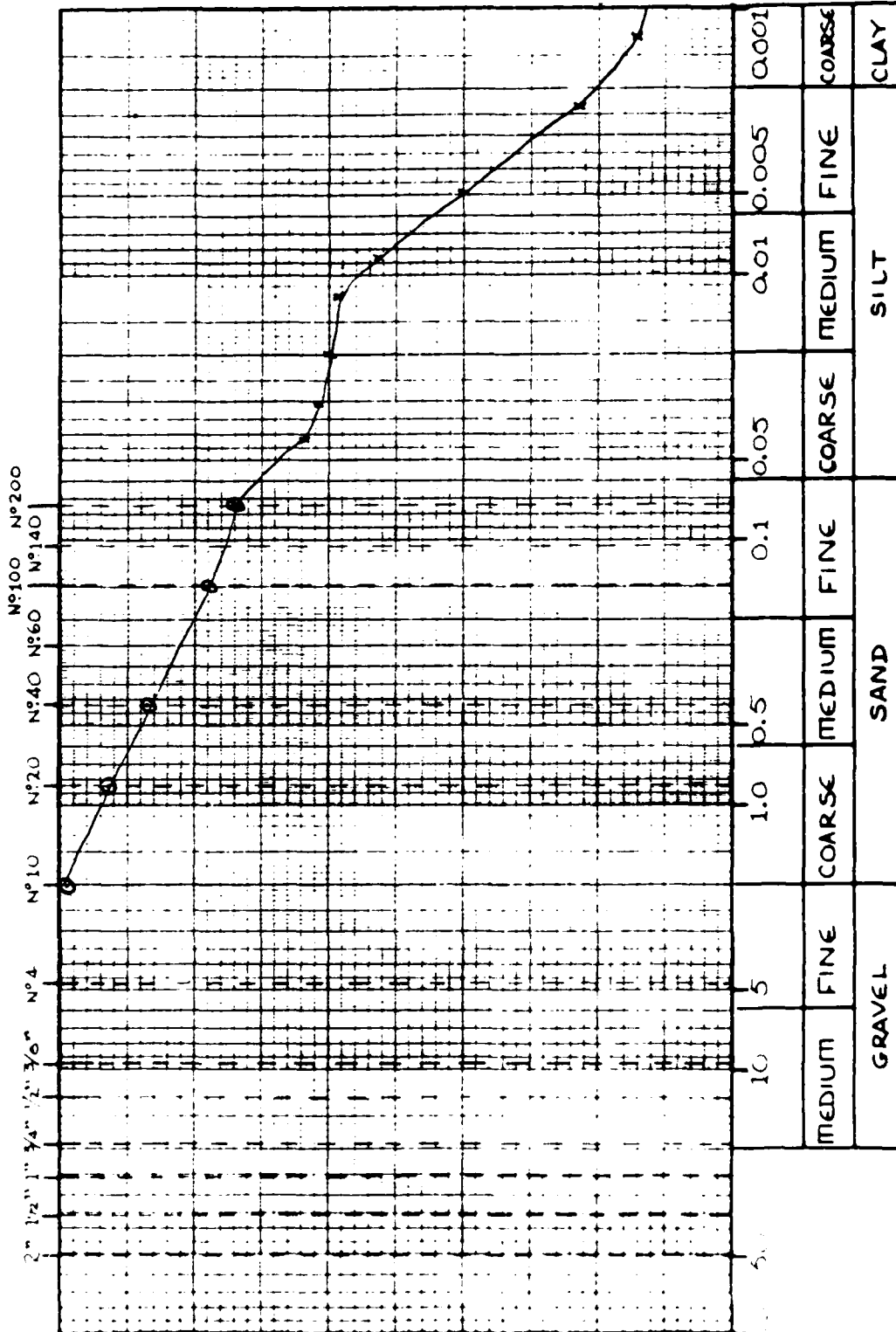
GRAVEL	%
SAND	30 %
SILT	50 %
CLAY	20 %

DESCRIPTION:

COMMENTS

Total Sample Dry wt = 34.6 gm

- SIEVE SIZES -



R1316-1 ✕
120-123

FILE NO: _____
SAMPLE NO: _____
DATE: _____
BY: _____

HYDROMETER ANALYSIS

1230

AST.M. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R _H	TEMP. °C	R _H + C _m C _d	DIA- METER (mm)	L	K	N (%)	N ₁ (%)
		1/2	—	—	—			.0122		
		1	21	—	22.3	0.043	12.7	"	64.4	
		2	20	—	21.3	0.031	12.9	"	61.5	
		5	19.5	30	20.8	0.020	12.9	"	60.1	
		13	19	—	20.3	0.012	13.0	"	58.7	
	1256	26	17	30	18.3	0.0087	13.3	"	54.9	
	1:58	86	12.5	30	13.8	0.0069	14.0	"	40.0	
	0750	440	9	25	8.1	0.0024	14.7	.0124	23.4	
	—	1440	5	27	5	0.0013	15.3	.0126	14.4	

DESCRIPTION: _____

SPECIFIC GRAVITY, G_s : ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, C_m : _____

DISPERSING AGENT CORRECTION, C_d : _____

DRY WEIGHT OF SOIL, U_s : _____

% < N°60 SIEVE: _____

$N_1 = \left(\frac{\% < N°60}{100} \right) N = \text{_____} N$ (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{U_s} = R \underline{2.89}$

REMARKS: Whole sample Total 34.6 gm

RB 16 X
120' - 123

FILE NO: _____
SAMPLE NO: _____
DATE: _____
BY: _____

- SIEVE ANALYSIS -

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT	
			RETAINED	PASSING
3 IN.				
2 1/2 IN.				
2 IN.				
1 1/2 IN.				
1 IN.				
3/4 IN.				
1/2 IN.				
3/8 IN.				
NO. 4				100.0
NO. 10	0.6	1.7		98.3
NO. 20	1.8	5.2		93.1
NO. 40	2.0	5.6		87.3
NO. 60				
NO. 100	3.1	8.9		78.4
NO. 140				
NO. 200	1.4	4.0		74.4
PAN	25.7	24.4		0
TOTAL	34.6			
REMARKS <u>Whole Sample Total 34.6 gm.</u>				

GRAIN SIZE CHART

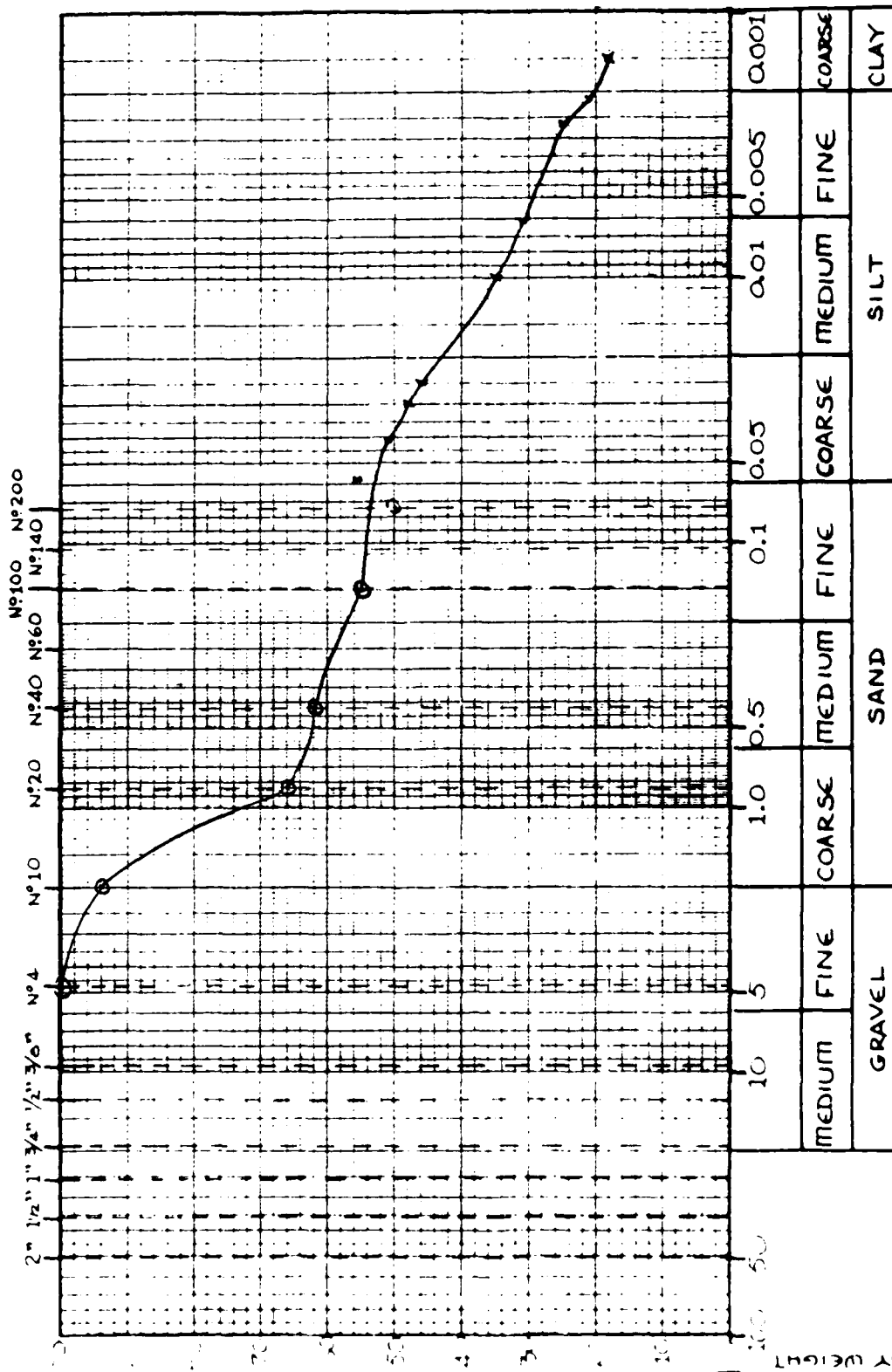
FILE NO: 1604-1
 SAMPLE NO: RB 16
 DATE: 140'-160'
 BY:

GRAVEL	6 %
SAND	41 %
SILT	53 %
CLAY	20 %

DESCRIPTION:

COMMENTS

- SIEVE SIZES -



M.I.T. CLASSIFICATION
 - GRAIN SIZE (mm) -

R13-16
140-160

FILE NO: _____
SAMPLE NO: _____
DATE: _____
BY: _____

HYDROMETER ANALYSIS

1210

AST.M. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R _H	TEMP. °C	R _H = R _H + (C _{MCd})	DIA- METER (mm)	L	K	N (%)	N ₁ (%)
		1/2	27		27.9	1059	11.7	.0123	55.8	
		1	25		25.9	1042	12.0	"	57.8	
		2	23		23.9	1030	12.4	"	47.8	
		3	22	29	22.9	1025	12.5	"	45.8	
		19	18.5	-	17.4	1010	13.0	"	34.8	
	1310	60	15	28	15.4	10061	13.7	.0124	30.8	
		700	13	26	12.6	10027	14.0	.0127	25.2	
	0800	470	11	26	10.6	10022	14.3	"	21.2	
		960	9	27	9.0	10015	14.7	.0126	18.0	

DESCRIPTION: _____

SPECIFIC GRAVITY γ_s ; G_s : ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, C_m : _____

DISPERSING AGENT CORRECTION, C_d : _____

DRY WEIGHT OF SOIL, U_s : _____

% < N#60 SIEVE: _____

$N_1 = \left(\frac{\% < N\#60}{100} \right) N = \text{_____} N$ (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{U_s} = R \text{_____}$

REMARKS: _____

RB - 16
140 - 160

FILE NO: _____
SAMPLE NO: _____
DATE: _____
BY: _____

- SIEVE ANALYSIS -

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT	
			RETAINED	PASSING
3 IN.				
2 1/2 IN.				
2 IN.				
1 1/2 IN.				
1 IN.				
3/4 IN.				
1/2 IN.				
3/8 IN.				
NO. 4				100.0
NO. 10	3.2	6.4		93.6
NO. 20	13.6	27.2		66.4
NO. 40	2.2	4.4		62
NO. 60				
NO. 100	3.3	6.6		55.4
NO. 140				
NO. 200	2.5	5.0		50.4
PAN	25.2	50.4		0
TOTAL	50.0	100.0		
REMARKS _____				

GRAIN SIZE CHART

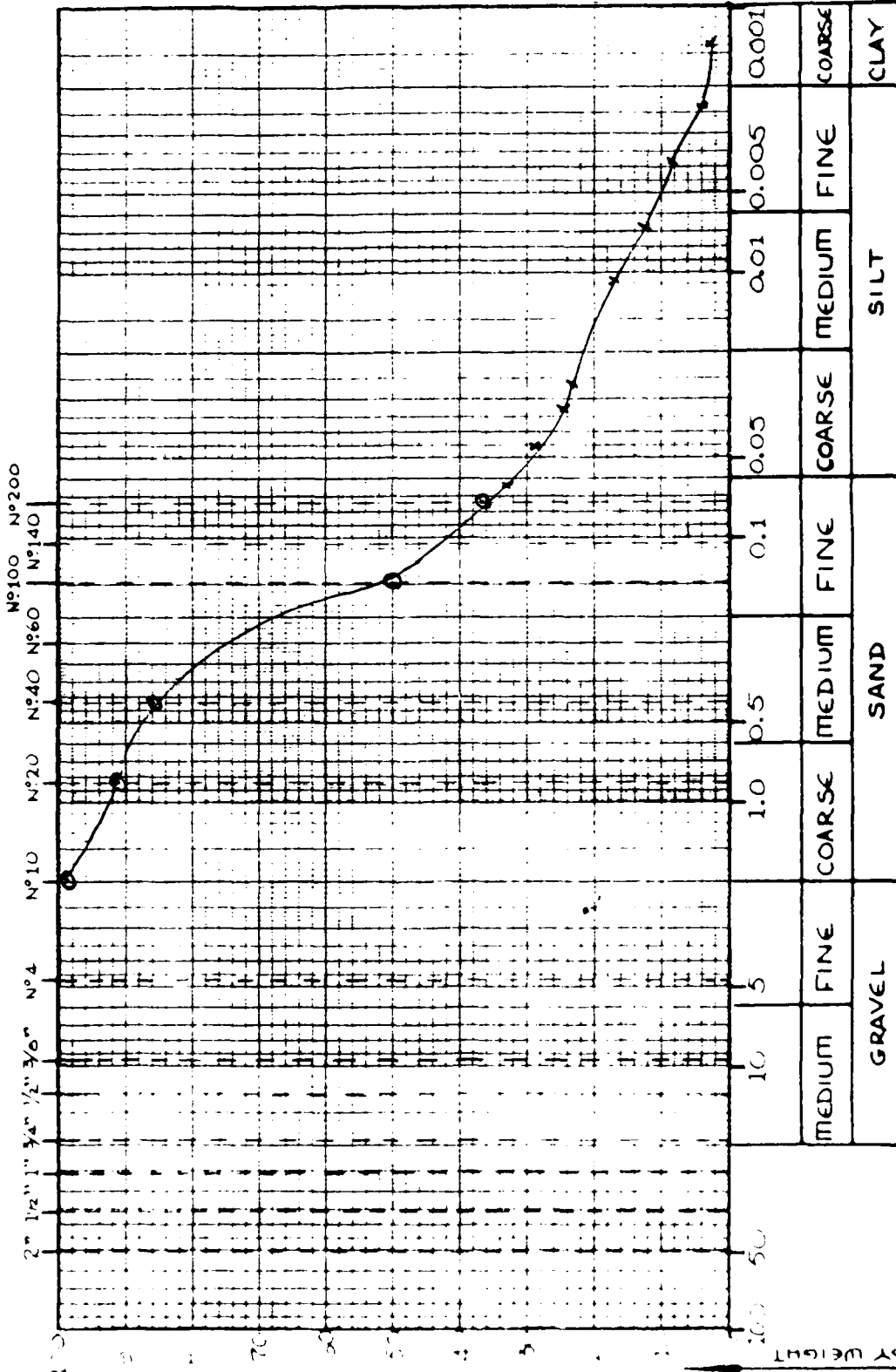
FILE NO: 1604-7
 SAMPLE NO: RA 16
 DATE: 160-220
 BY:

GRAVEL	%
SAND	68%
SILT	29%
CLAY	3%

DESCRIPTION:

COMMENTS

- SIEVE SIZES -



M.I.T. CLASSIFICATION
 - GRAIN SIZE (mm) -

160-220

BY:

HYDROMETER ANALYSIS

0120

A.S.T.M. D 422-63.

[illegible]

DESCRIPTION:

SPECIFIC GRAVITY; G_s : ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, C_m : _____

DISPERSING AGENT CORRECTION, Cd: _____

DRY WEIGHT OF SOIL, W_s : _____.

% < N° 60 SIEVE : _____.

$$N_1 = \left(\frac{\% < N_{60}}{100} \right) N = \underline{\hspace{2cm}} N \text{ (COMBINED ANALYSIS).}$$
$$N = R \frac{G}{G-1} \times \frac{100}{U_S} = R \underline{\hspace{2cm}}.$$

REMARKS:

RB - 16

150 - 220

FILE NO: _____

SAMPLE NO: _____

DATE: _____

BY: _____

- SIEVE ANALYSIS -

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT	
			RETAINED	PASSING
3 IN.				
2 1/2 IN.				
2 IN.				
1 1/2 IN.				
1 IN.				
3/4 IN.				
1/2 IN.				
3/8 IN.				
NO. 4				100
NO. 10	0.3	0.6		99.4
NO. 20	4.4	2.8		96.6
NO. 40	2.3	4.6		86
NO. 60				
NO. 100	18.7	36.4		49.6
NO. 140				
NO. 200	6.9	12.4		37.2
PAN	18.6	37.2		"
TOTAL	50	100		

REMARKS _____

GRAIN SIZE CHART

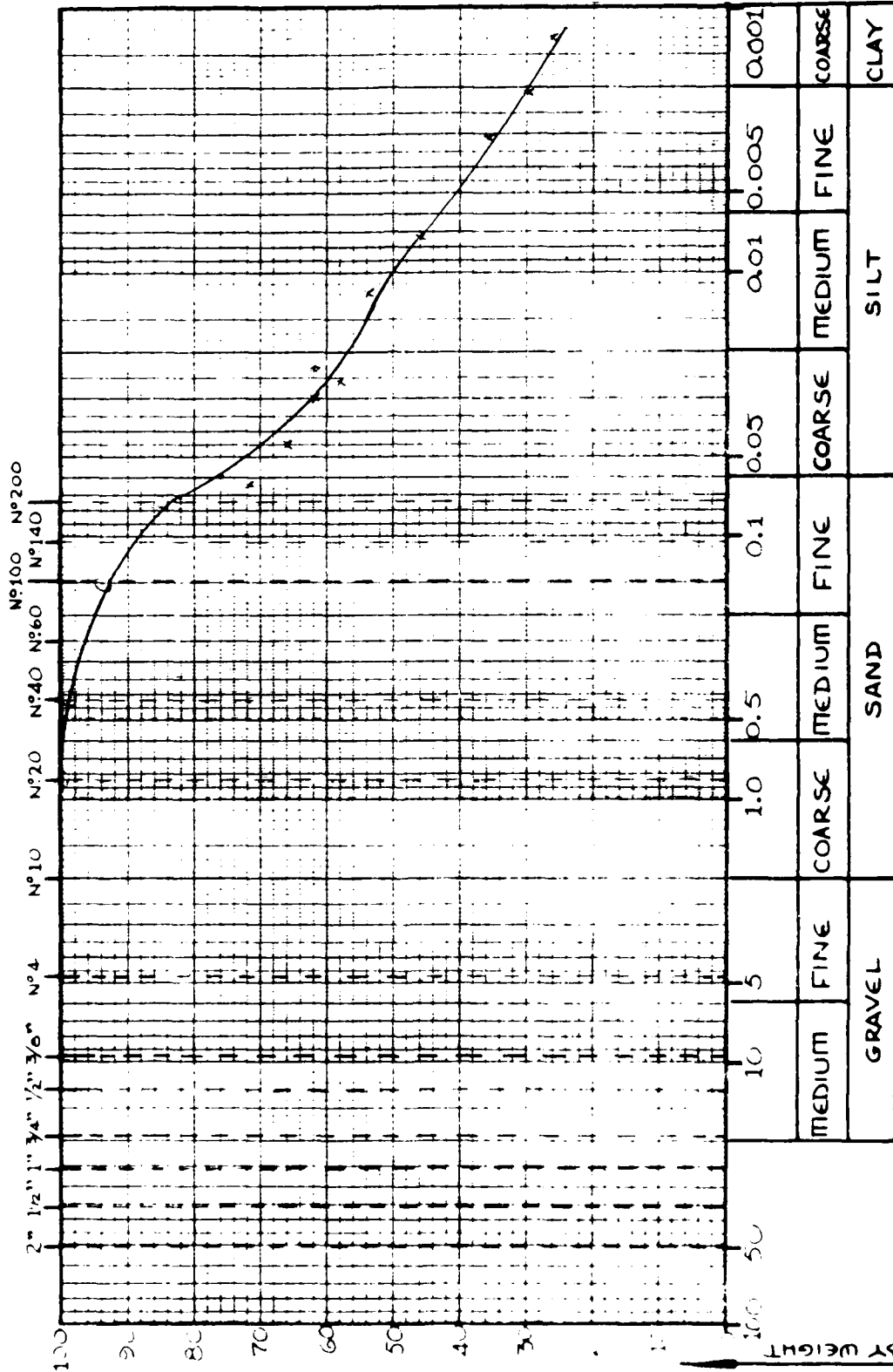
FILE NO: _____
 SAMPLE NO: SB 17-1
 DATE: 5-16
 BY: _____

GRAVEL	%
SAND	24%
SILT	46%
CLAY	30%

DESCRIPTION: _____

COMMENTS: _____

- SIEVE SIZES -



U.T. CLASSIFICATION
 - GRAIN SIZE (mm) -

RB 17-1

80-90

FILE NO: _____
 SAMPLE NO: _____
 DATE: _____
 BY: _____

HYDROMETER ANALYSIS

ASTM. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R _H	TEMP. °C	R _H = R _H + (C _m C _d)	DIA- METER (mm)	L	K	N (%)	N ₁ (%)
		1/2	16.5		14.0	0.063	13.4	.0122	72	
		1	15		16.5	0.045	13.7	"	66	
		2	14		15.5	0.032	13.8	"	62	
		3	13	30.5	14.5	0.026	14.0	"	58	
		14	12	-	13.5	0.012	14.2	"	54	
		41	10	-	11.5	0.0073	14.5	"	46	
		215	8	29.5	9.1	0.0032	14.8	.0123	36.4	
		530	7	28.5	7.6	0.0021	15.0	.0124	30.4	
		1340	6	28	6.4	0.0013	15.2	.0124	25.6	

DESCRIPTION: _____

SPECIFIC GRAVITY, G_s : ASSUMED = _____; CALCULATED = _____MENISCUS CORRECTION, C_m : _____DISPERSING AGENT CORRECTION, C_d : _____DRY WEIGHT OF SOIL, U_s : _____

% < N°60 SIEVE: _____

$$N_1 = \left(\frac{\% < N°60}{100} \right) N = \text{_____} N \text{ (COMBINED ANALYSIS).}$$

$$N = R \frac{G}{G-1} \times \frac{100}{U_s} = R \text{_____}$$
REMARKS: Total Sample 24.7 gm

LR 7-1

50-10

2.75

FILE NO: _____

SAMPLE NO: _____

DATE: _____

BY: _____

- SIEVE ANALYSIS -

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT	
			RETAINED	PASSING
3 IN.				
2 1/2 IN.				
2 IN.				
1 1/2 IN.				
1 IN.				
3/4 IN.				
1/2 IN.				
3/8 IN.				
NO. 4				
NO. 10				
NO. 20				100 -
NO. 40	0.2	0.8		99.2
NO. 60				
NO. 100	1.3	5.3		94.7
NO. 140				
NO. 200	2.1	8.5		91.5
PAN	21.1	85.4		
TOTAL	24.7	100.0		
REMARKS _____				

GRAIN SIZE CHART

FILE NO:

SAMPLE NO: RB 17-3

DATE: 180-190

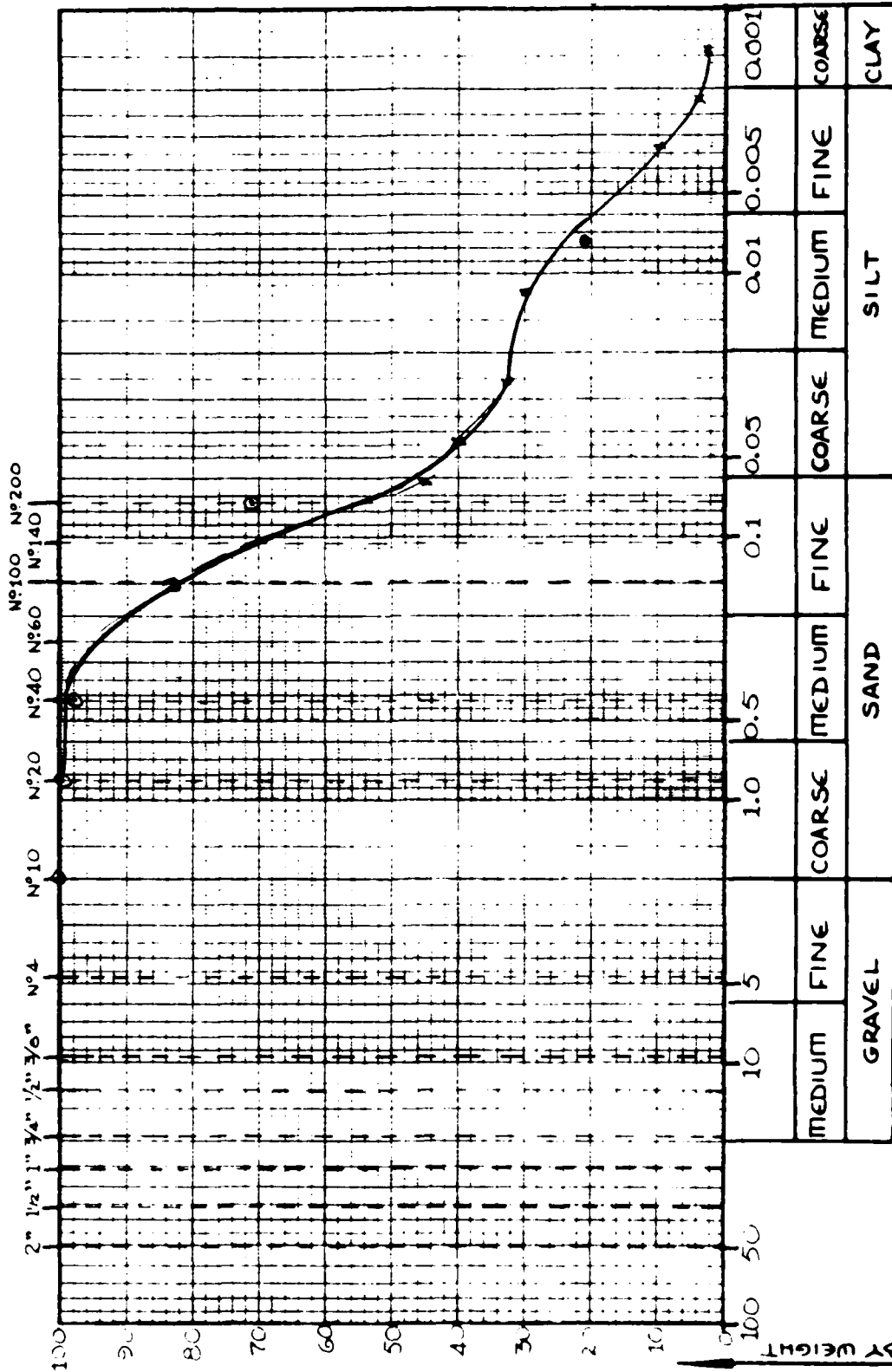
BY:

GRAVEL	%
SAND	54%
SILT	42%
CLAY	4%

DESCRIPTION:

COMMENTS

- SIEVE SIZES -



U.S. ARMY CORPS OF ENGINEERS
- GRAIN SIZE (mm) -

PB17-3

180-190

FILE NO. _____

SAMPLE NO: _____

DATE: _____

BY: _____

HYDROMETER ANALYSIS

ASTM. D 422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R _H	TEMP. °C	R _H ± R _H + (CmCd)	DIA- METER (mm)	L	K	N (%)	N ₁ (%)
		1/2	21		22.5	0.062	12.7	10.122	45.0	
		1	18.5		20.0	0.044	13.1	"	40.0	
		2	16.2		17.7	0.032	13.5	"	35.4	
		3	15	30.5	16.5	0.026	13.7	"	33.0	
		14	13.3	-	14.8	0.012	14.0	"	29.6	
		37	9.2	-	10.7	0.0077	14.7	"	21.4	
		210	4.0	29.5	5.1	0.0033	15.5	0.023	10.2	
		525	1.5	28.5	2.1	0.0022	15.9	0.0124	4.2	
		1335	1	28	1.4	0.0014	16.0	"	2.8	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____MENISCUS CORRECTION, C_m: _____DISPERSING AGENT CORRECTION, C_d: _____DRY WEIGHT OF SOIL, U_s: _____

% < N°60 SIEVE: _____

$$N_1 = \left(\frac{\% < N°60}{100} \right) N = \text{_____} N \text{ (COMBINED ANALYSIS).}$$

$$N = R \frac{G}{G-1} \times \frac{100}{U_s} = R \text{ _____}$$

REMARKS: _____

KE-1-3

100-10

- SIEVE ANALYSIS -

FILE NO: _____
SAMPLE NO: _____
DATE: _____
BY: _____

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT	
			RETAINED	PASSING
3 IN.				
2 1/2 IN.				
2 IN.				
1 1/2 IN.				
1 IN.				
3/4 IN.				
1/2 IN.				
3/8 IN.				
NO. 4				
NO. 10	5			100.0
NO. 20	5.1	0.2		99.8
NO. 40	1	2		97.8
NO. 60				
NO. 100	7.2	14.4		83.4
NO. 140				
NO. 200	5.1	12.6		70.8
PAN	25.4	70.8		
TOTAL	50.2	100.0		
REMARKS _____				

GRAIN SIZE CHART

FILE NO:

SAMPLE NO:

DATE:

BY:

RB 19-1

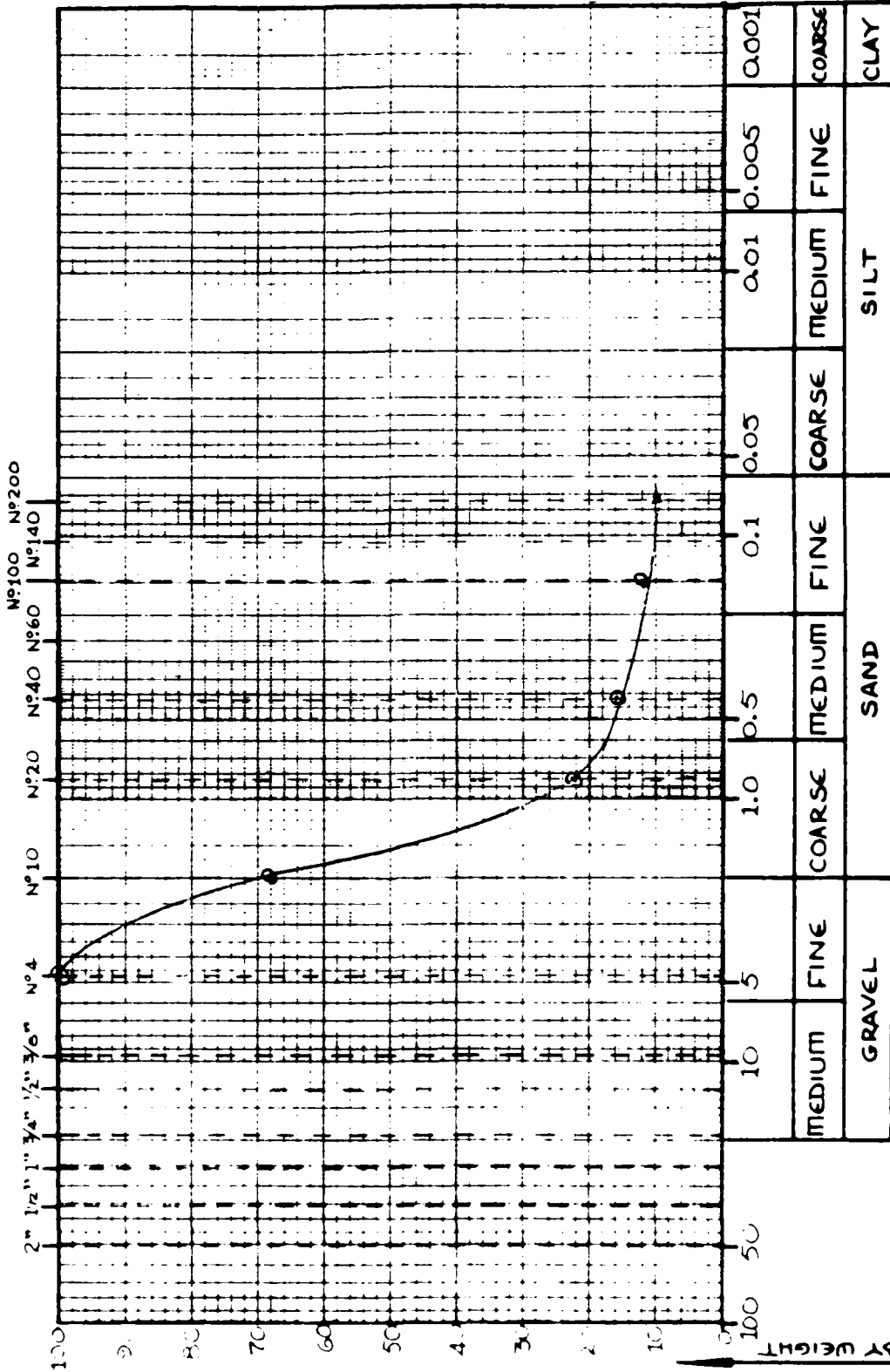
140-145

GRAVEL	32 %
SAND	53 %
SILT	10 %
CLAY	5 %

DESCRIPTION:

COMMENTS

- SIEVE SIZES -



M.I.T. CLASSIFICATION
- GRAIN SIZE (mm) -

140-145

BY:

A.S.T.M. D 422-63.

~~Not use~~

REMARKS: _____

RB 19-1

140-145

10.9 g

- SIEVE ANALYSIS -

FILE NO: _____

SAMPLE NO: _____

DATE: _____

BY: _____

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT	
			RETAINED	PASSING
3 IN.				
2 1/2 IN.				
2 IN.				
1 1/2 IN.				
1 IN.				
3/4 IN.				
1/2 IN.				
3/8 IN.				
NO. 4				100.0
NO. 10	3.5	22.3		77.7
NO. 20	5.0	45.8		54.2
NO. 40	0.7	6.4		93.6
NO. 60				
NO. 100	0.4	3.7		96.3
NO. 140				
NO. 200	0.2	1.8		98.2
PAN	1.1	15.0		
TOTAL	11.9	100.0		
REMARKS _____				

GRAIN SIZE CHART

FILE NO:

SAMPLE NO: RB 19-2

DATE: 170-173

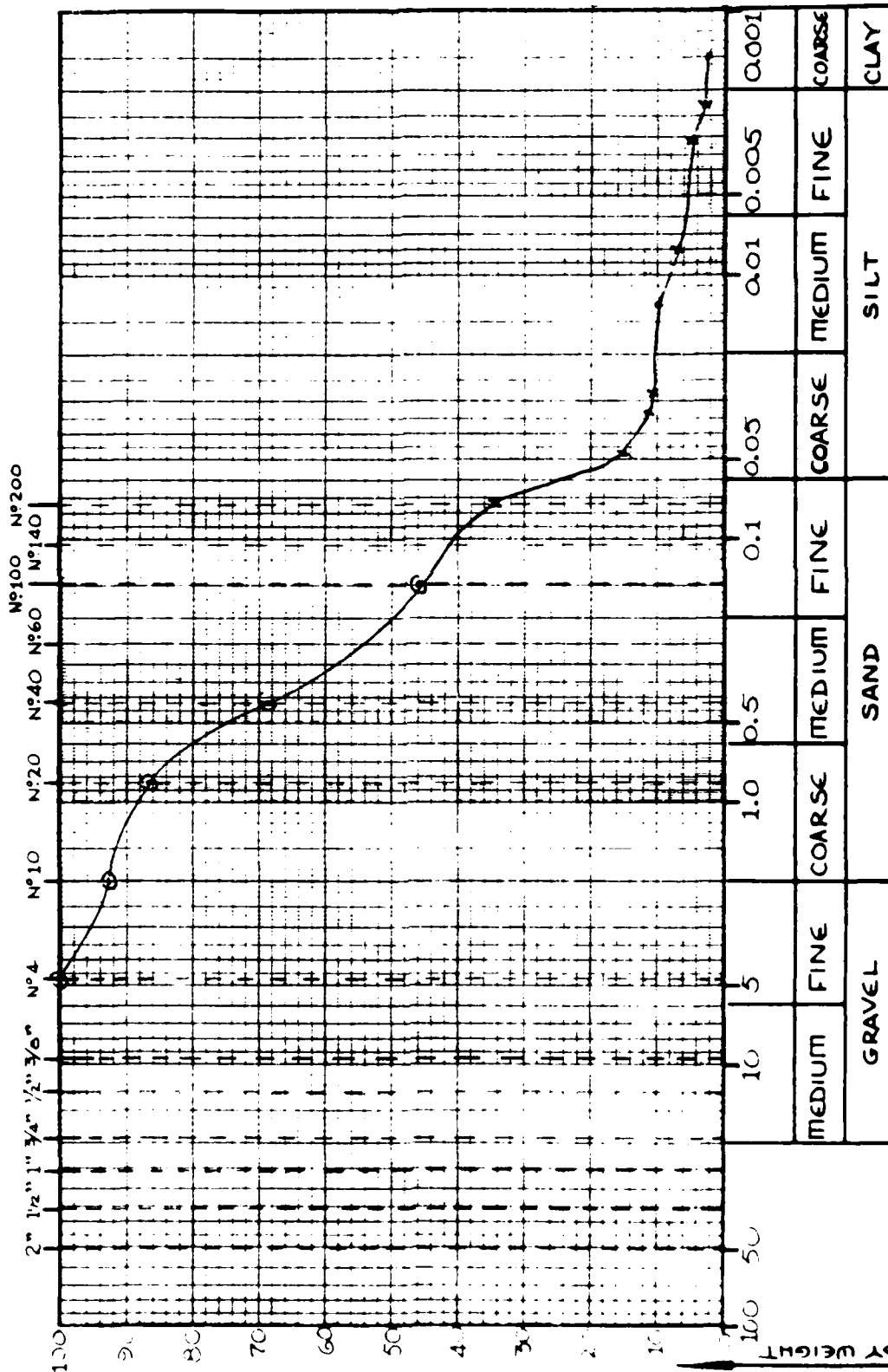
BY:

GRAVEL	7%
SAND	69%
SILT	21%
CLAY	3%

DESCRIPTION:

COMMENTS

- SIEVE SIZES -



U.S. CLASSIFICATION
- GRAIN SIZE (mm) -

RB19-2

170-173

FILE NO: _____

SAMPLE NO: _____

DATE: _____

BY: _____

HYDROMETER ANALYSIS

ASTM D 422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R _H	TEMP. °C	R _H = R _H + (CmCd)	DIA- METER (mm)	L	K	N (%)	N ₁ (%)
		1/2	9		9.7	0.068	14.7	.0125	18.4	
		1	7.5		7.7	0.048	14.9	"	15.4	
		2	6.0		6.7	0.034	15.2	"	12.4	
		3	5.5	22.5	5.7	0.028	15.3	"	11.4	
		14	5.0	-	5.7	0.013	15.3	"	10.4	
		38	3.5	-	3.7	0.0080	15.5	"	7.4	
		85	3.0	26	3.4	0.0071	15.6	.0124	6.8	
		245	2.5	26.5	2.3	0.0032	15.7	.0127	4.6	
		485	2.5	25	1.6	0.0023	15.7	.0129	3.2	
		1145	1.0	27	1.0	0.0015	16.0	.0126	2.0	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s : ASSUMED = _____; CALCULATED = _____MENISCUS CORRECTION, C_m : _____DISPERSING AGENT CORRECTION, C_d : _____DRY WEIGHT OF SOIL, U_s : _____

% < N°60 SIEVE: _____

$$N_1 = \left(\frac{\% < N°60}{100} \right) N = \text{_____} N \text{ (COMBINED ANALYSIS).}$$

$$N = R \frac{G}{G-1} \times \frac{100}{U_s} = R \text{ _____}$$

REMARKS: _____

BE 11-2
100-112

FILE NO: _____
SAMPLE NO: _____
DATE: _____
BY: _____

- SIEVE ANALYSIS -

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT	
			RETAINED	PASSING
3 IN.				
2 1/2 IN.				
2 IN.				
1 1/2 IN.				
1 IN.				
3/4 IN.				
1/2 IN.				
3/8 IN.				
NO. 4				100
NO. 10	5.4	5.4		94.6
NO. 20	1.1	6.5		93.5
NO. 40	7.4	13.9		86.1
NO. 60				
NO. 100	11.0	24.9		75.1
NO. 140				
NO. 200	5.2	30.1		69.9
PAN	17.5	37.6		
TOTAL	50.0	100.0		
REMARKS _____				

GRAIN SIZE CHART

FILE NO: _____

SAMPLE NO: RB 19-3

DATE: 180-188

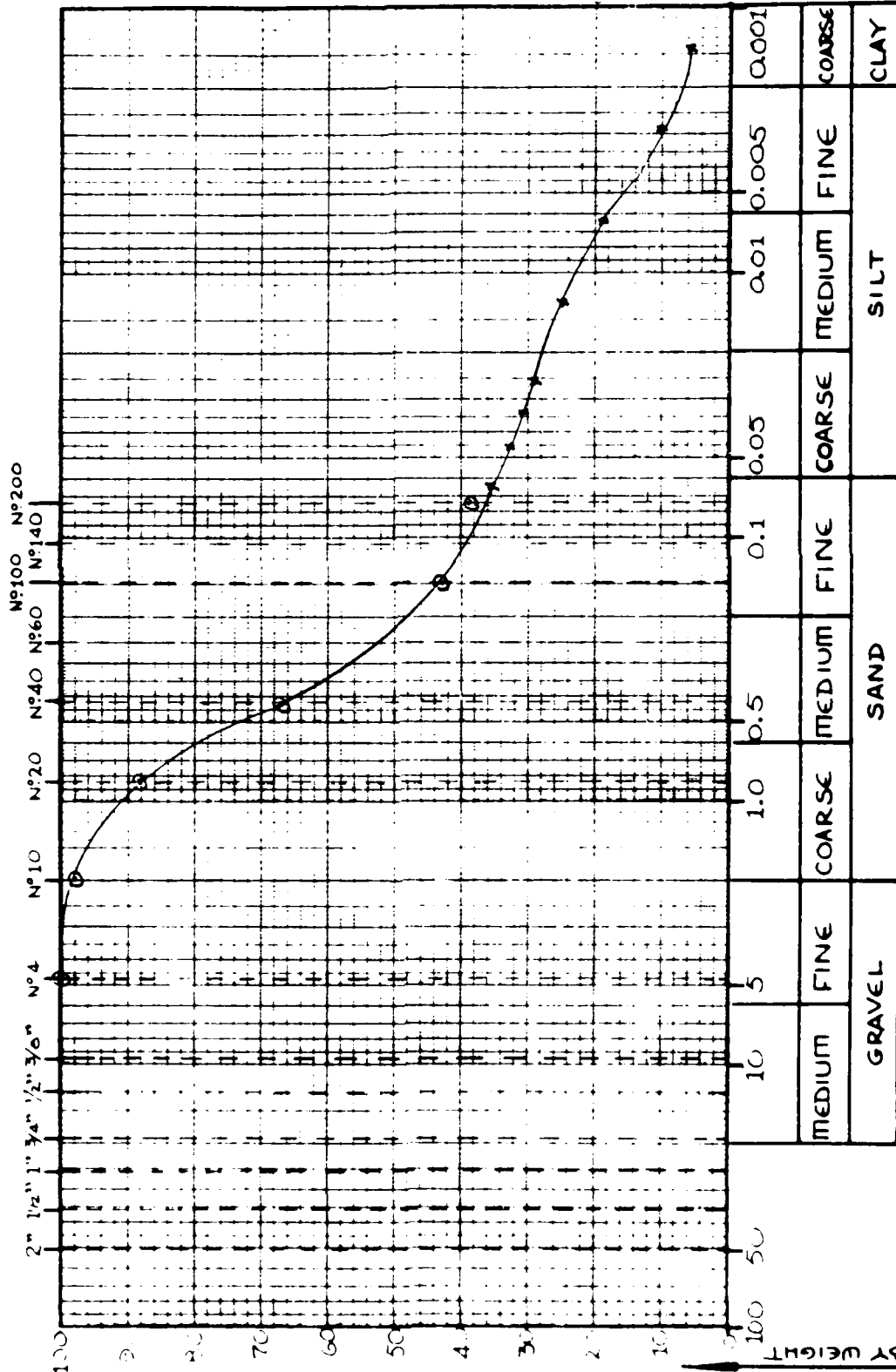
BY: _____

GRAVEL	2 %
SAND	64 %
SILT	21 %
CLAY	7 %

DESCRIPTION: _____

COMMENTS: _____

- SIEVE SIZES -



M.I.T. CLASSIFICATION
- GRAIN SIZE (mm) -

180-185

FILE NO: _____
SAMPLE NO: _____
DATE: _____
BY: _____

HYDROMETER ANALYSIS

A.S.T.M. D 422-63.

[illegible]

DESCRIPTION: _____

SPECIFIC GRAVITY ; G_s : ASSUMED = _____ ; CALCULATED = _____

MENISCUS CORRECTION, C_m : _____

DISPERSING AGENT CORRECTION, Cd : _____.

DRY WEIGHT OF SOIL, W_s : _____.

% < N° 60 SIEVE : _____.

$$N_1 = \left(\frac{\% < N^{\circ} 60}{100} \right) N = \text{_____} N \text{ (COMBINED ANALYSIS).}$$
$$N = R \frac{G}{G-1} \times \frac{100}{U_S} = R \underline{\hspace{2cm}}.$$

REMARKS: _____

R1319-3

181-183

whole sample

- SIEVE ANALYSIS -

FILE NO: _____

SAMPLE NO: _____

DATE: _____

BY: _____

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT	
			RETAINED	PASSING
3 IN.				
2 1/2 IN.				
2 IN.				
1 1/2 IN.				
1 IN.				
3/4 IN.				
1/2 IN.				
3/8 IN.				
NO. 4				100
NO. 10	0.8	1.6		99.2
NO. 20	5.0	10.0		89.2
NO. 40	10.4	20.8		68.4
NO. 60				
NO. 100	12.1	22.2		46.2
NO. 140				
NO. 200	2.2	4.4		31.8
PAN	19.5	39.0		
TOTAL	50.0	100		

REMARKS _____

GRAIN SIZE CHART

FILE NO:

SAMPLE NO: RB 19-4

DATE: 191-200

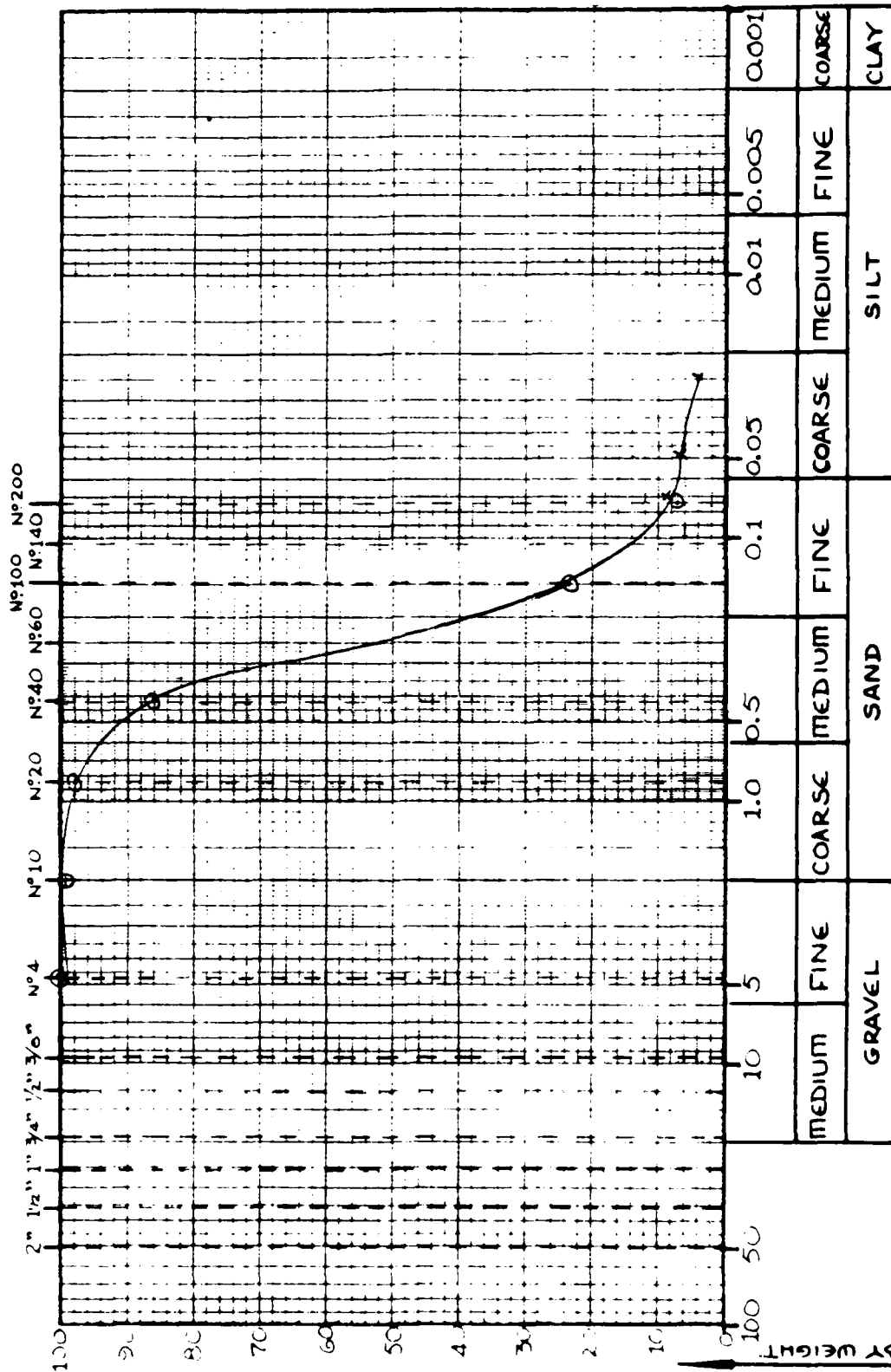
BY:

GRAVEL	%
SAND	93%
SILT	7%
CLAY	%

DESCRIPTION:

COMMENTS

- SIEVE SIZES -



M.I.T. CLASSIFICATION
- GRAIN SIZE (mm) -

RB 19-4
141-200

FILE NO: _____
SAMPLE NO: _____
DATE: _____
BY: _____

HYDROMETER ANALYSIS

A.S.T.M. D 422-63.

[illegible]

DESCRIPTION: _____

SPECIFIC GRAVITY ; G_s : ASSUMED = _____ ; CALCULATED = _____

MENISCUS CORRECTION, C_m : _____

DISPERSING AGENT CORRECTION, Cd: _____

DRY WEIGHT OF SOIL, U_3 : _____.

% < NO. 60 SIEVE : _____.

$$N_1 = \left(\frac{\% < N^{\circ}60}{100} \right) N = \text{_____} N \text{ (COMBINED ANALYSIS).}$$
$$N = R \frac{G}{G-1} \times \frac{100}{U_S} = R \underline{\hspace{2cm}}.$$

REMARKS: _____

R319-4

191-200

- SIEVE ANALYSIS -

FILE NO: _____

SAMPLE NO: _____

DATE: _____

BY: _____

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT	
			RETAINED	PASSING
3 IN.				
2 1/2 IN.				
2 IN.				
1 1/2 IN.				
1 IN.				
3/4 IN.				
1/2 IN.				
3/8 IN.				
NO. 4				100.0
NO. 10	0.2	0.2		99.8
NO. 20	1.0	2.0		97.8
NO. 40	5.7	11.2		86.2
NO. 60				
NO. 100	31.3	52.6		23.0
NO. 140				
NO. 200	8.1	13.2		74.2
PAN	2.7	4.5		
TOTAL	50.0	100.0		
REMARKS _____				

GRAIN SIZE CHART

FILE NO:

SAMPLE NO: RA 20-1

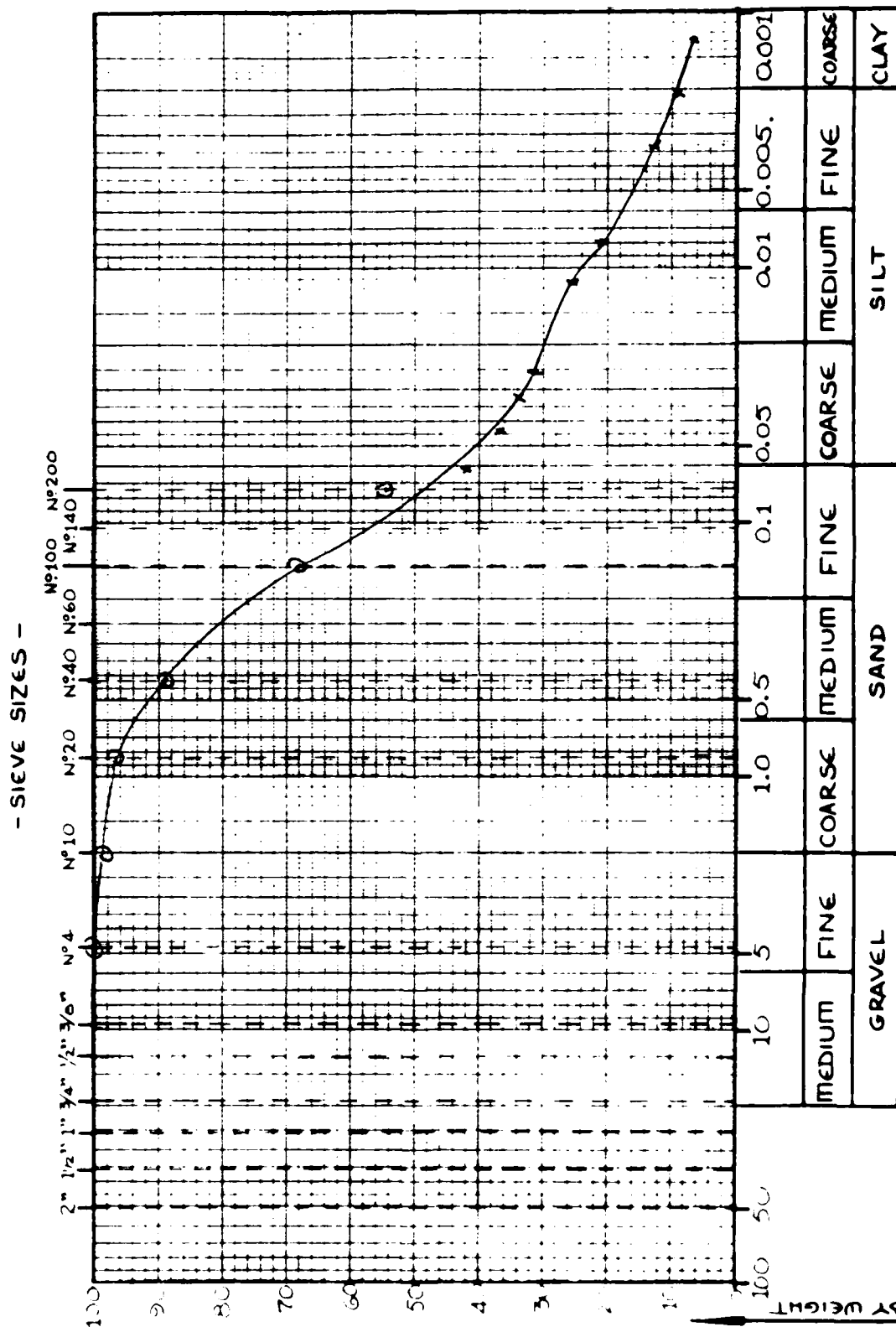
DATE: 140-145

BY:

GRAVEL	1 %
SAND	55 %
SILT	3 %
CLAY	9 %

DESCRIPTION:

COMMENTS



M.I.T. CLASSIFICATION
-GRAIN SIZE (mm):-

RB 20-1

140-145

FILE NO: _____

SAMPLE NO: _____

DATE: _____

BY: _____

HYDROMETER ANALYSIS

ASTM. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R _H	TEMP. °C	R _H = R _H + (C _m C _d)	DIA- METER (mm)	L	K	N (%)	N ₁ (%)
		1 1/2	19.5	.	21.0	0.062	13.0	.0122	42	
		1	17		18.5	0.044	13.3	"	37	
		2	15.5		17.0	0.032	13.6	"	34.0	
		3	14.5	30.5	16.0	0.026	13.8	"	32.0	
		14	11.0	-	12.5	0.012	14.3	"	25	
		33	9	-	10.5	0.0081	14.7	"	21.0	
		205	5.5	29.5	6.6	0.0033	15.2	.0123	13.2	
		520	4.0	28.5	4.6	0.0021	15.0	.0124	9.2	
		1330	3	28	3.4	0.0013	15.6	"	6.8	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____MENISCUS CORRECTION, C_m: _____DISPERSING AGENT CORRECTION, C_d: _____DRY WEIGHT OF SOIL, U_s: _____

% < N°60 SIEVE: _____

$$N_1 = \left(\frac{\% < N°60}{100} \right) N = \text{_____} N \text{ (COMBINED ANALYSIS)}$$

$$N = R \frac{G}{G-1} \times \frac{100}{U_s} = R \text{ _____}$$

REMARKS: _____

2E 57-1

100-45

FILE NO: _____
SAMPLE NO: _____
DATE: _____
BY: _____

- SIEVE ANALYSIS -

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT	
			RETAINED	PASSING
3 IN.				
2 1/2 IN.				
2 IN.				
1 1/2 IN.				
1 IN.				
3/4 IN.				
1/2 IN.				
3/8 IN.				
NO. 4				100
NO. 10	0.2	0.8		99.2
NO. 20	1.1	2.2		97.8
NO. 40	4	8		92
NO. 60				
NO. 100	12.5	21.0		79.0
NO. 140				
NO. 200	4.7	13.4		86.6
PAN	27.3	54.6		
TOTAL	50.0	100.0		

REMARKS _____

GRAIN SIZE CHART

FILE NO: _____

SAMPLE NO: RB 20-2

DATE: 150-155

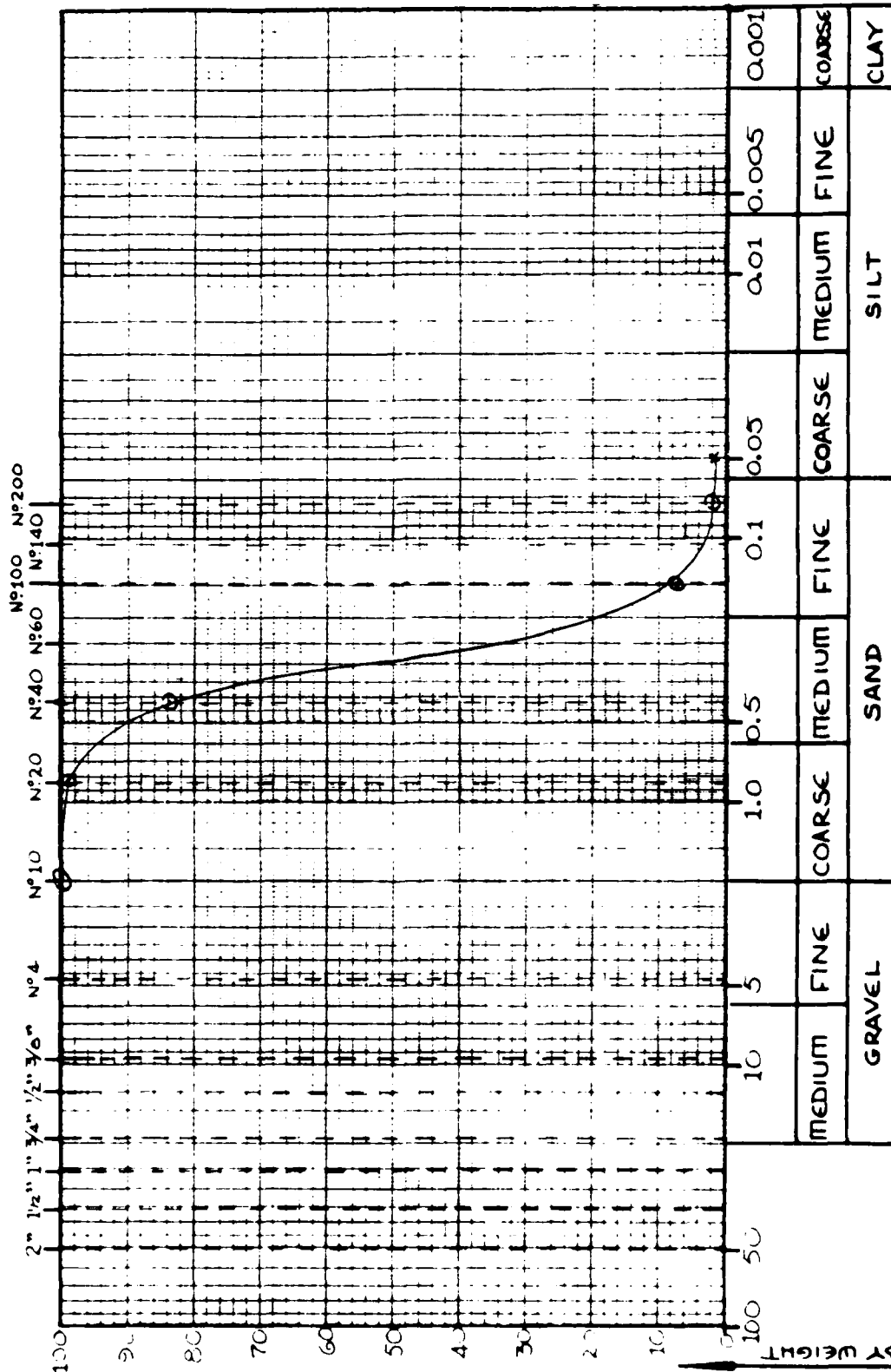
BY: _____

GRAVEL	%
SAND	98
SILT	2
CLAY	%

DESCRIPTION: _____

COMMENTS _____

- SIEVE SIZES -



U.S.T. CLASSIFICATION
- GRAIN SIZE (mm) -

150-155

FILE NO:

SAMPLE NO:

DATE:

BY:

HYDROMETER ANALYSIS

A.S.T.M. D 422-63.

[illegible]

DESCRIPTION: _____

SPECIFIC GRAVITY ; G_s : ASSUMED = _____ ; CALCULATED = _____

MENISCUS CORRECTION, C_m : _____

DISPERSING AGENT CORRECTION, Cd: _____

DRY WEIGHT OF SOIL, W_s : _____.

% < NO 60 SIEVE : _____.

$$N_1 = \left(\frac{\% < N_{60}}{100} \right) N = \text{_____} N \text{ (COMBINED ANALYSIS).}$$
$$N = R \frac{G}{G-1} \times \frac{100}{U_S} = R \underline{\hspace{2cm}}.$$

REMARKS: _____

R320.2

150-155

Whole Stone

- SIEVE ANALYSIS -

FILE NO: _____
SAMPLE NO: _____
DATE: _____
BY: _____

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT	
			RETAINED	PASSING
3 IN.				
2 1/2 IN.				
2 IN.				
1 1/2 IN.				
1 IN.				
3/4 IN.				
1/2 IN.				
3/8 IN.				
NO. 4				
NO. 10	- 0 -			
NO. 20	0.3	0.6		
NO. 40	2.5	3.1		
NO. 60				
NO. 100	35.3	38.4		
NO. 140				
NO. 200	2.4	40.8		
PAN	1.2	42.0		
TOTAL	50.0			
REMARKS _____				

GRAIN SIZE CHART

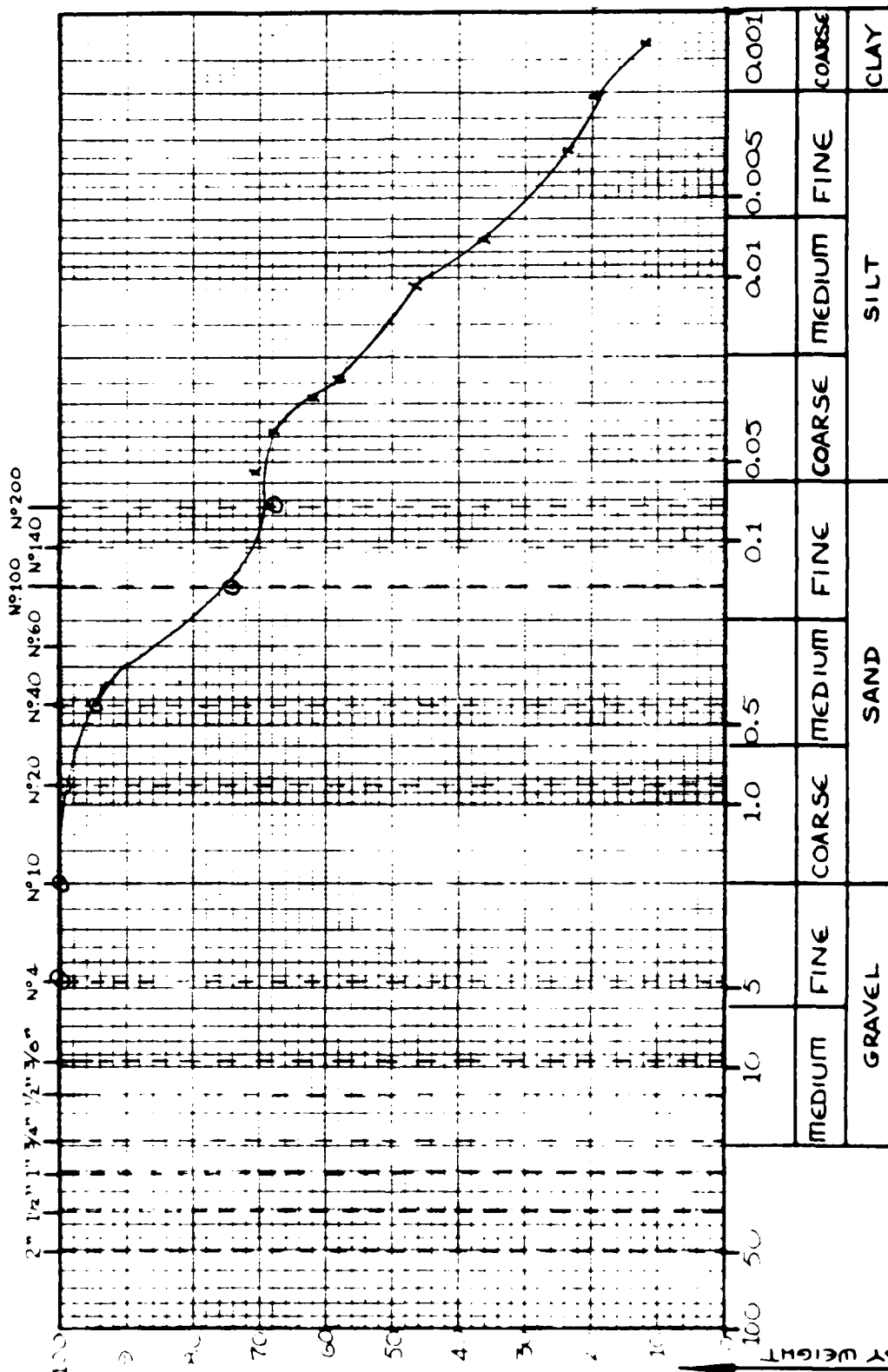
FILE NO: _____
 SAMPLE NO: RB 20-3
 DATE: 170-180
 BY: _____

GRAVEL	%
SAND	31%
SILT	60%
CLAY	9%

DESCRIPTION:

COMMENTS

- SIEVE SIZES -



M.I.T. CLASSIFICATION
 - GRAIN SIZE (mm) -

RB20-3

170-180

FILE NO: _____

SAMPLE NO: _____

DATE: _____

BY: _____

HYDROMETER ANALYSIS

ASTM. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R _H	TEMP. °C	R _H = R _H + (C _m C _d)	DIA- METER (mm)	L	K	N (%)	N ₁ (%)
		1/2	35		36.5	0.056	10.4	1062	73	
		1	32.5		34.0	0.040	10.8	"	68	
		2	29.5		31.0	0.029	11.3	"	62	
		3	27.5	30.5	29.0	0.024	11.6	"	58	
		14	22	-	23.5	0.011	12.5	"	47	
		41	17	-	18.5	0.0069	13.3	"	37	
		195	11	29.0	11.9	0.0033	14.3	10123	23.8	
		510	9.5	28.5	10.1	0.0021	14.6	10124	20.2	
		1320	6	28	6.4	0.0013	15.2	"	12.8	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____MENISCUS CORRECTION, C_m: _____DISPERSING AGENT CORRECTION, C_d: _____DRY WEIGHT OF SOIL, U_s: _____

% < N°60 SIEVE: _____

$$N_1 = \left(\frac{\% < N°60}{100} \right) N = \text{_____} N \text{ (COMBINED ANALYSIS)}$$

$$N = R \frac{G}{G-1} \times \frac{100}{U_s} = R \text{ _____}$$

REMARKS: _____

245-20-2

FILE NO: _____

SAMPLE NO: _____

DATE: _____

BY: _____

- SIEVE ANALYSIS -

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT	
			RETAINED	PASSING
3 IN.				
2 1/2 IN.				
2 IN.				
1 1/2 IN.				
1 IN.				
3/4 IN.				
1/2 IN.				
3/8 IN.				
NO. 4				100
NO. 10	0.	0.2		99.8
NO. 20	1	2		97.8
NO. 40	1.4	2.8		95.2
NO. 60				
NO. 100	0.3	2.6		92.6
NO. 140				
NO. 200	2	6		86.6
PAN	24.2	100		
TOTAL	50.0	100.0		
REMARKS _____				

GRAIN SIZE CHART

FILE NO:

SAMPLE NO: RB-20-4

DATE: 190-190

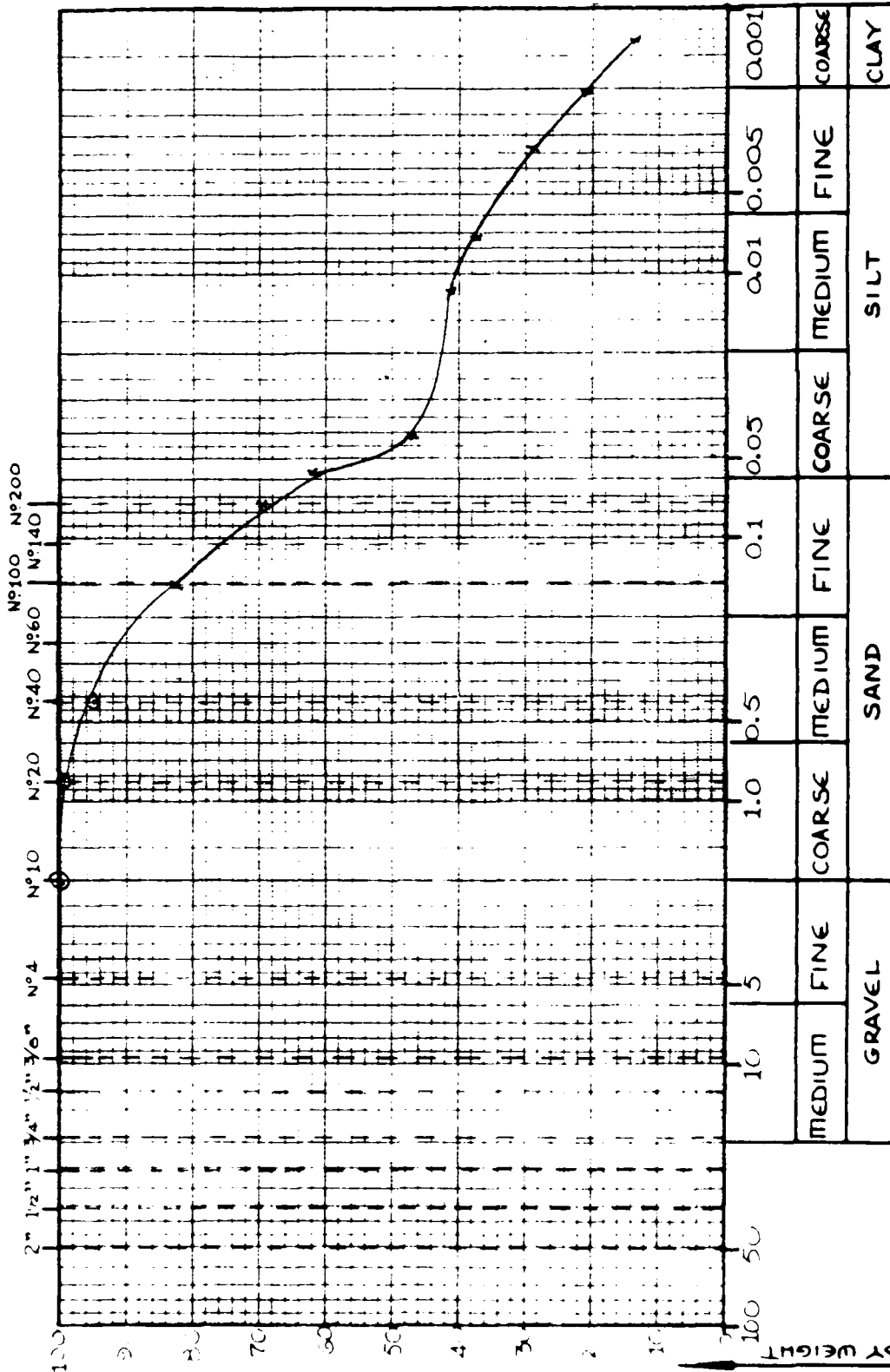
BY:

GRAVEL	%
SAND	38
SILT	51
CLAY	11

DESCRIPTION:

COMMENTS

- SIEVE SIZES -



M.I.T. CLASSIFICATION
- GRAIN SIZE (mm) -

RB 20-4
180-190

FILE NO: _____
SAMPLE NO: _____
DATE: _____
BY: _____

HYDROMETER ANALYSIS

A.S.T.M. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R _H	TEMP. °C	R _H = R _H + (C _m C _d)	DIA- METER (mm)	L	K	N (%)	N ₁ (%)
		1 1/2	29		30.5	0.058	11.4	0.122	61.0	
		1	27		28.5	0.042	11.7	"	57.0	
		2	25		26.5	0.030	12.0	"	53.0	
		3	24	30.5	25.5	0.025	12.2	"	51.0	
		14	21	-	22.5	0.012	12.7	"	43.0	
		37	17.5	-	19.0	0.0073	13.2	"	38.0	
		190	13	29	14.5	0.0033	14.0	0.122	29.0	
		505	10	28.5	10.6	0.0021	14.5	0.124	21.2	
		1315	7	28	7.4	0.0013	15.0	0.124	14.8	

DESCRIPTION: _____
 SPECIFIC GRAVITY, G_s : ASSUMED = _____; CALCULATED = _____
 MENISCUS CORRECTION, C_m : _____
 DISPERSING AGENT CORRECTION, C_d : _____
 DRY WEIGHT OF SOIL, U_s : _____
 % < N°60 SIEVE: _____
 $N_1 = \left(\frac{\% < N°60}{100} \right) N =$ _____ N (COMBINED ANALYSIS).

$$N = R \frac{G}{G-1} \times \frac{100}{U_s} = R \text{ _____}$$

REMARKS: _____

- SIEVE ANALYSIS -

FILE NO: _____
SAMPLE NO: _____
DATE: _____
BY: _____

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT	
			RETAINED	PASSING
3 IN.				
2 1/2 IN.				
2 IN.				
1 1/2 IN.				
1 IN.				
3/4 IN.				
1/2 IN.				
3/8 IN.				
NO. 4				
NO. 10	0			100.0
NO. 20		1.2		98.8
NO. 40		3.4		96.6
NO. 60				
NO. 100		12.6		87.4
NO. 140				
NO. 200	6.3	13.0		83.4
PAN	34.9	69.8		
TOTAL	50.0	100.0		
REMARKS _____				

GRAIN SIZE CHART

FILE NO:

SAMPLE NO:

RB 20-5

DATE:

195-100

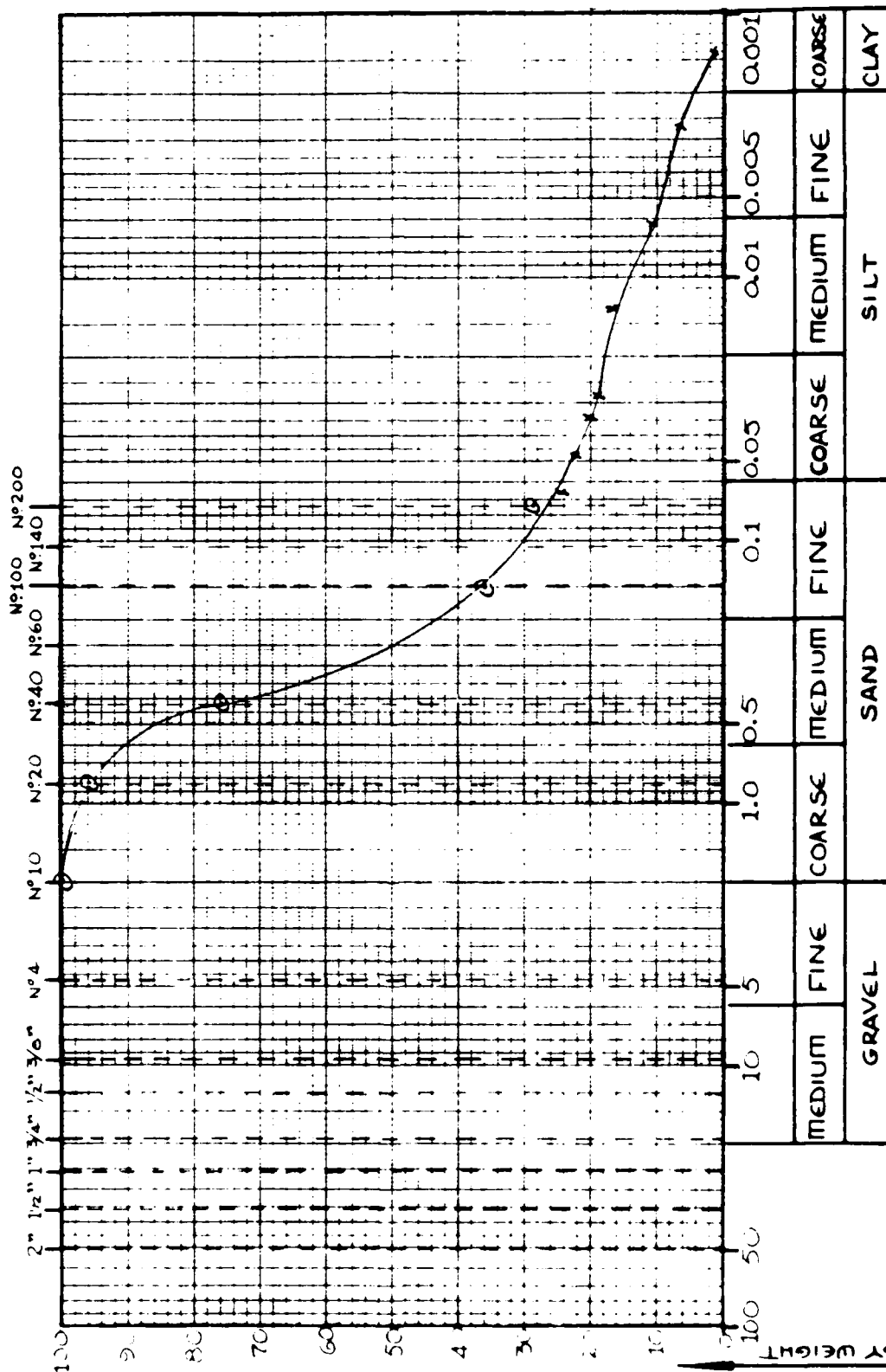
BY:

GRAVEL	%
SAND	76%
SILT	20%
CLAY	4%

DESCRIPTION:

COMMENTS:

- SIEVE SIZES -



U.S.T. CLASSIFICATION
- GRAIN SIZE (mm) -

RB 20-5

195-200

FILE NO: _____

SAMPLE NO: _____

DATE: _____

BY: _____

HYDROMETER ANALYSIS

ASTM. D 422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R _H	TEMP. °C	R _H = R _H + (C _m C _d)	DIA- METER (mm)	L	K	N (%)	N ₁ (%)
		1/2	12		12.3	0.067	14.2	.0125	24.6	
		1	11		11.3	0.047	14.3	"	22.6	
		2	9.5		9.8	0.034	14.6	"	19.6	
		3	9	27.6	9.3	0.028	14.7	"	18.6	
		14	8	—	8.3	0.013	14.8	"	16.6	
		60	5	28	5.4	0.0063	15.3	.0124	10.8	
		335	3.5	26	3.1	0.0027	15.5	.0127	6.2	
		1290	0.2	28	0.6	0.0014	16.1	.0124	1.2	

DESCRIPTION: _____

SPECIFIC GRAVITY γ_s ; G_s : ASSUMED = _____; CALCULATED = _____MENISCUS CORRECTION, C_m : _____DISPERSING AGENT CORRECTION, C_d : _____DRY WEIGHT OF SOIL, U_s : _____

% < N°60 SIEVE: _____

$$N_1 = \left(\frac{\% < N°60}{100} \right) N = \text{_____} N \text{ (COMBINED ANALYSIS).}$$

$$N = R \frac{G}{G-1} \times \frac{100}{U_s} = R \text{ _____}$$

REMARKS: _____

213 20-5
125-200

FILE NO: _____
SAMPLE NO: _____
DATE: _____
BY: _____

- SIEVE ANALYSIS -

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT	
			RETAINED	PASSING
3 IN.				
2 1/2 IN.				
2 IN.				
1 1/2 IN.				
1 IN.				
3/4 IN.				
1/2 IN.				
3/8 IN.				
NO. 4				
NO. 10	5			100
NO. 20	2	4		96
NO. 40	10.1	20.2		75.8
NO. 60				
NO. 100	20.1	40.2		35.8
NO. 140				
NO. 200	3.8	7.6		28.2
PAN	12.0	24.0		
TOTAL	50.0	100.0		
REMARKS _____				

GRAIN SIZE CHART

FILE NO: _____

SAMPLE NO: RB 21-1

DATE: 130-140

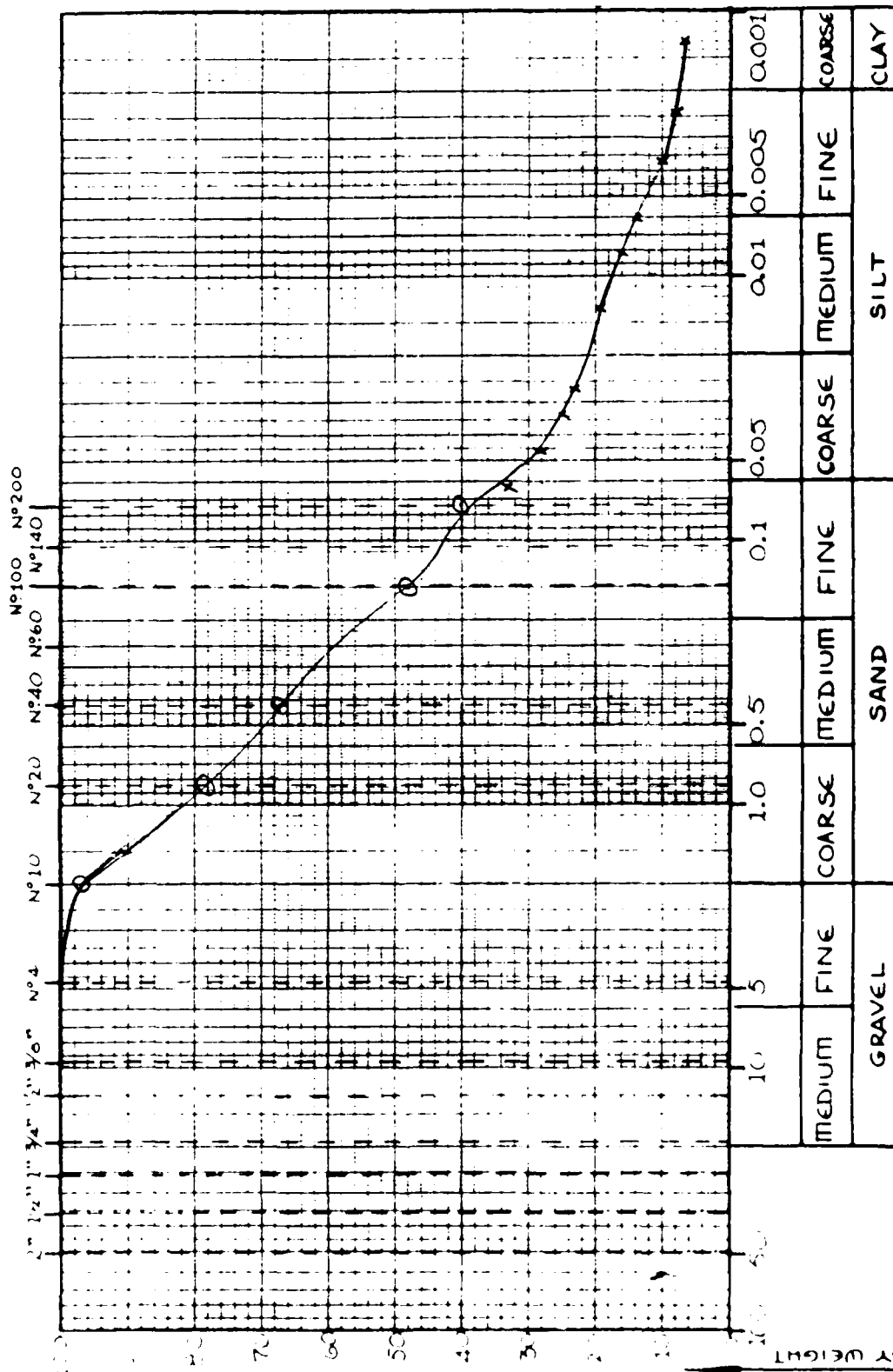
BY: _____

GRAVEL	4 %
SAND	62 %
SILT	36 %
CLAY	8 %

DESCRIPTION: _____

COMMENTS _____

- SIEVE SIZES -



U.S.T. CLASSIFICATION
- GRAIN SIZE (mm) -

% FINER BY WEIGHT

21-1

130-140

FILE NO: _____

SAMPLE NO: _____

DATE: _____

BY: _____

HYDROMETER ANALYSIS

AST.M. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R _H	TEMP. °C	R _H = R _H + (C _m C _d)	DIA- METER (mm)	L	K	N (%)	N ₁ (%)
		1/2	15.5		16.4	0.064	13.6	.0123	32.8	
		1	13.6		13.9	0.046	14.0	"	27.8	
		2	12.0		12.9	0.033	14.2	"	25.8	
		3	11.0		11.9	0.027	14.3	"	23.8	
		14	8.5	29	9.4	0.013	14.7	"	18.8	
		35	7.0	-	7.9	0.0081	15.0	"	15.8	
		62	6.0	-	6.9	0.0061	15.2	"	13.8	
		135	4	29	4.9	0.0037	15.5	"	9.8	
		415	4	27	4.0	0.0024	15.5	.0126	8.0	
		1375	3	28	3.4	0.0017	15.6	.0124	6.8	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____MENISCUS CORRECTION, C_m: _____DISPERSING AGENT CORRECTION, C_d: _____DRY WEIGHT OF SOIL, U_s: _____

% < N°60 SIEVE: _____

$$N_1 = \left(\frac{\% < N°60}{100} \right) N = \text{_____} N \text{ (COMBINED ANALYSIS).}$$

$$N = R \frac{G}{G-1} \times \frac{100}{U_s} = R \text{ _____}$$

REMARKS: _____

21-1
130-140

FILE NO: _____
SAMPLE NO: _____
DATE: _____
BY: _____

- SIEVE ANALYSIS -

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT	
			RETAINED	PASSING
3 IN.				
2 1/2 IN.				
2 IN.				
1 1/2 IN.				
1 IN.				
3/4 IN.				
1/2 IN.				
3/8 IN.				
NO. 4				100.0
NO. 10	1.7	3.4		96.6
NO. 20	9.3	18.6		78.0
NO. 40	5.5	11.0		67.0
NO. 60				
NO. 100	9.3	18.6		48.4
NO. 140				
NO. 200	4.3	8.6		39.8
PAN	19.9	39.8		0
TOTAL	50.0	100.0		
REMARKS _____				

GRAIN SIZE CHART

FILE NO:

SAMPLE NO:

RB 21-2

DATE:

170-180

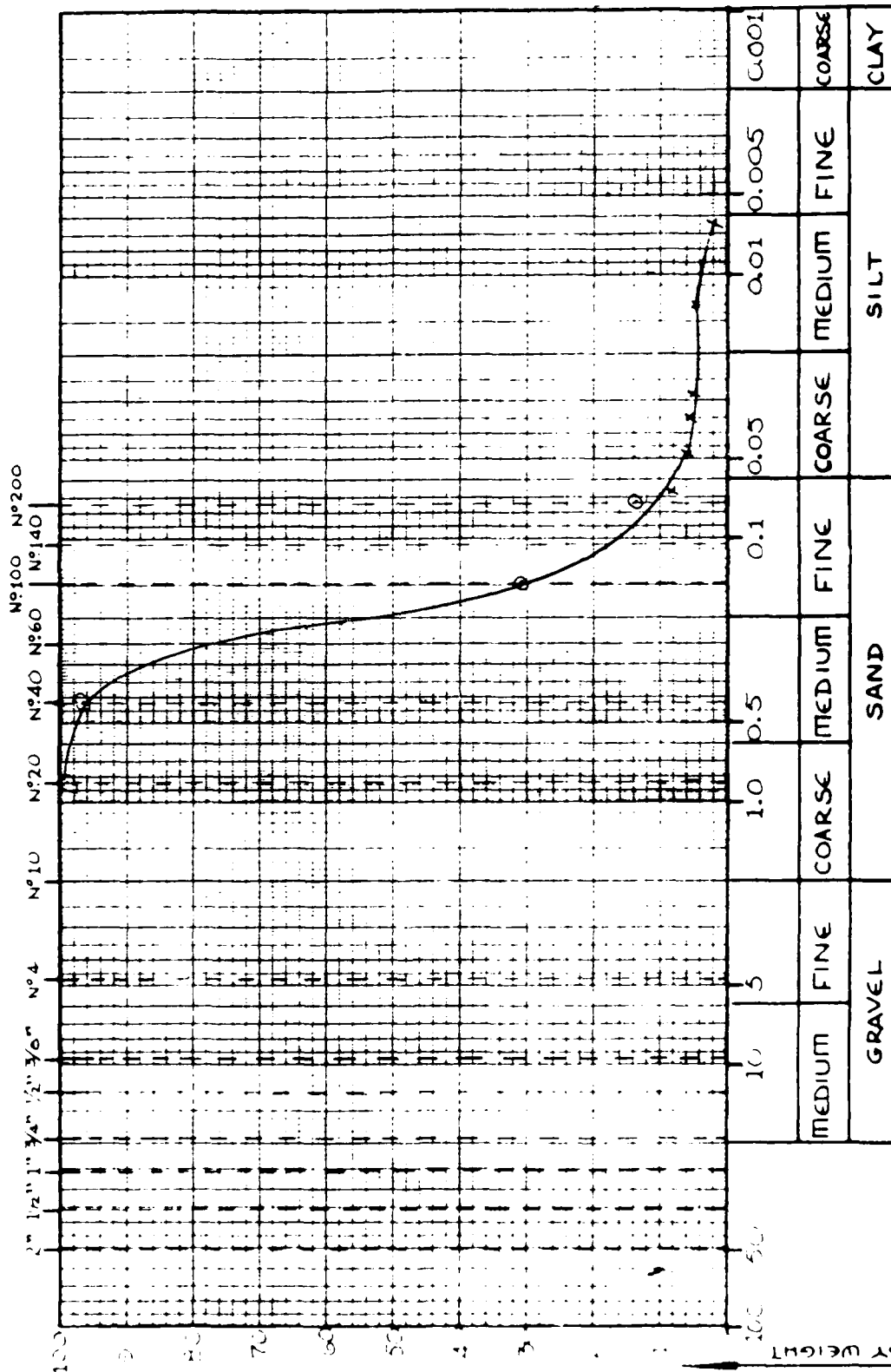
BY:

GRAVEL	%
SAND	92 %
SILT	8 %
CLAY	%

DESCRIPTION:

COMMENTS

- SIEVE SIZES -



170-180

REMARKS: _____

21-2

170-180

FILE NO: _____

SAMPLE NO: _____

DATE: _____

BY: _____

- SIEVE ANALYSIS -

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT	
			RETAINED	PASSING
3 IN.				
2 1/2 IN.				
2 IN.				
1 1/2 IN.				
1 IN.				
3/4 IN.				
1/2 IN.				
3/8 IN.				
NO. 4				
NO. 10	0			100.0
NO. 20	0.5	1.0		99.0
NO. 40	0.8	1.6		97.4
NO. 60				
NO. 100	33.0	66.0		31.4
NO. 140				
NO. 200	8.5	14.0		14.4
PAN	7.2	14.4		0
TOTAL	50.0	100.0		
REMARKS _____				

GRAIN SIZE CHART

FILE NO: 1604-1

SAMPLE NO: RB 22-1

DATE: 9-1-105

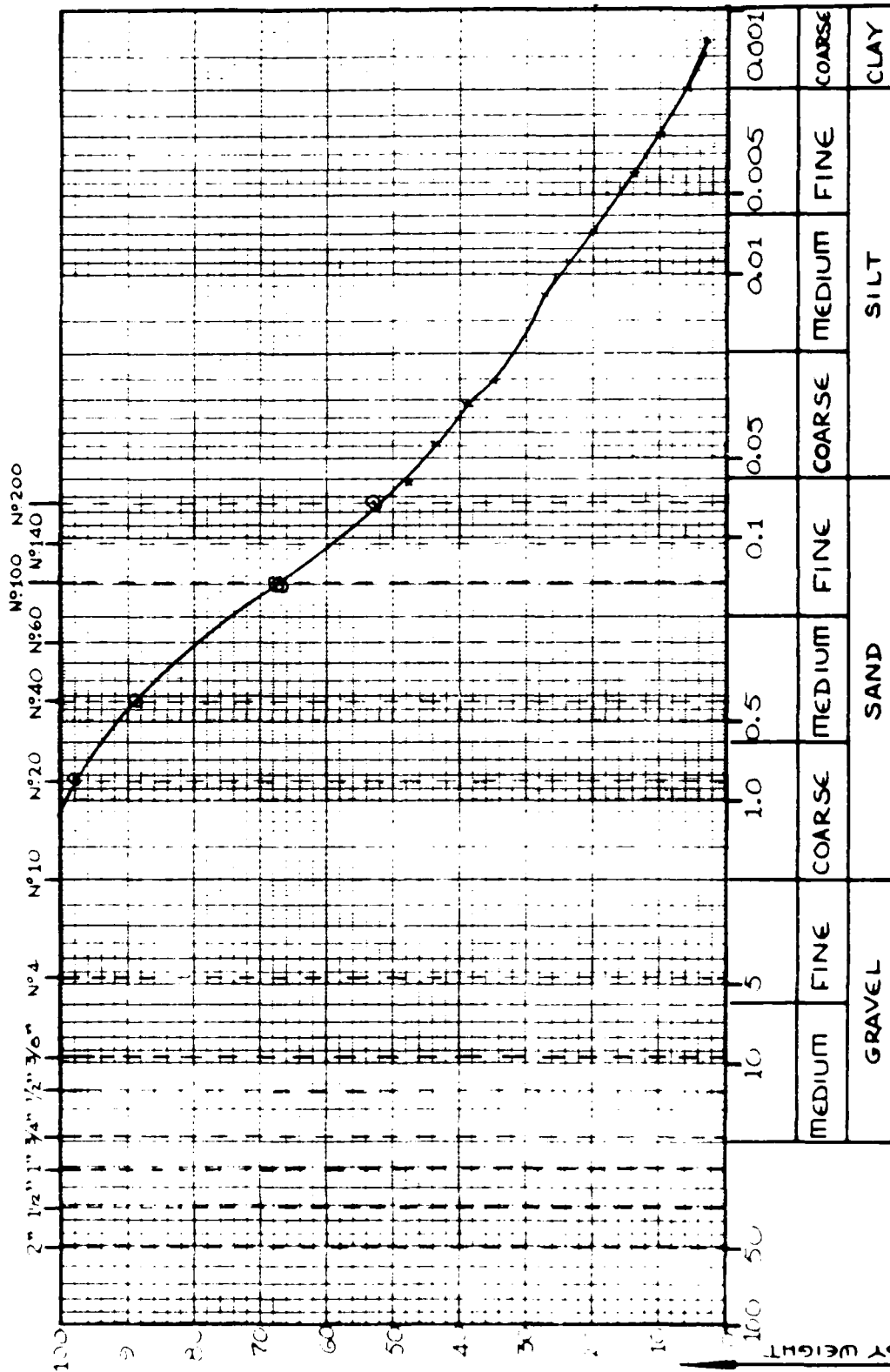
BY:

GRAVEL	%
SAND	52%
SILT	42%
CLAY	6%

DESCRIPTION:

COMMENTS

- SIEVE SIZES -



U.S.T. CLASSIFICATION
- GRAIN SIZE (mm) -

22-1

95-105

FILE NO: _____

SAMPLE NO: _____

DATE: _____

BY: _____

HYDROMETER ANALYSIS

A.S.T.M. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R _H	TEMP. °C	R _H = R _H + (C _m C _d)	DIA- METER (mm)	L	K	N (%)	N ₁ (%)
		1/2	23.5	—	23.9	.061	12.3	.0124	47.8	
		1	21.5	—	21.9	.044	12.6	"	43.8	
		2	19	—	19.4	.031	13.0	"	38.8	
		3	17	28	17.4	.026	13.3	"	34.8	
		14	13	—	13.4	.012	14.0	"	26.8	
		47	9.5	28	9.9	.0069	14.6	"	19.8	
		133	6.5	28	6.9	.0042	15.1	"	13.8	
	0100	260	5.0	27	5.0	.0030	15.3	.0126	10.0	
	0730	650	4.0	24.5	3.0	.0020	15.5	.0130	6.0	
	1930	1370	1.0	28	1.4	.0013	16.0	.0124	2.8	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____MENISCUS CORRECTION, C_m: _____DISPERSING AGENT CORRECTION, C_d: _____DRY WEIGHT OF SOIL, U_s: _____

% < N°60 SIEVE: _____

$$N_1 = \left(\frac{\% < N°60}{100} \right) N = \text{_____} N \text{ (COMBINED ANALYSIS)}$$

$$N = R \frac{G}{G-1} \times \frac{100}{U_s} = R \text{ _____}$$

REMARKS: _____

92-1
95-105

FILE NO: _____
SAMPLE NO: _____
DATE: _____
BY: _____

- SIEVE ANALYSIS -

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT	
			RETAINED	PASSING
3 IN.				
2 1/2 IN.				
2 IN.				
1 1/2 IN.				
1 IN.				
3/4 IN.				
1/2 IN.				
3/8 IN.				
NO. 4				
NO. 10	0 -0-			100.0
NO. 20	1.0	2.0		98.0
NO. 40	4.7	9.4		88.6
NO. 60				
NO. 100	10.0	20.0		68.6
NO. 140				
NO. 200	8.0	16.0		52.6
PAN	26.3	52.6		0
TOTAL	50.0	100.0		
REMARKS _____				

GRAIN SIZE CHART

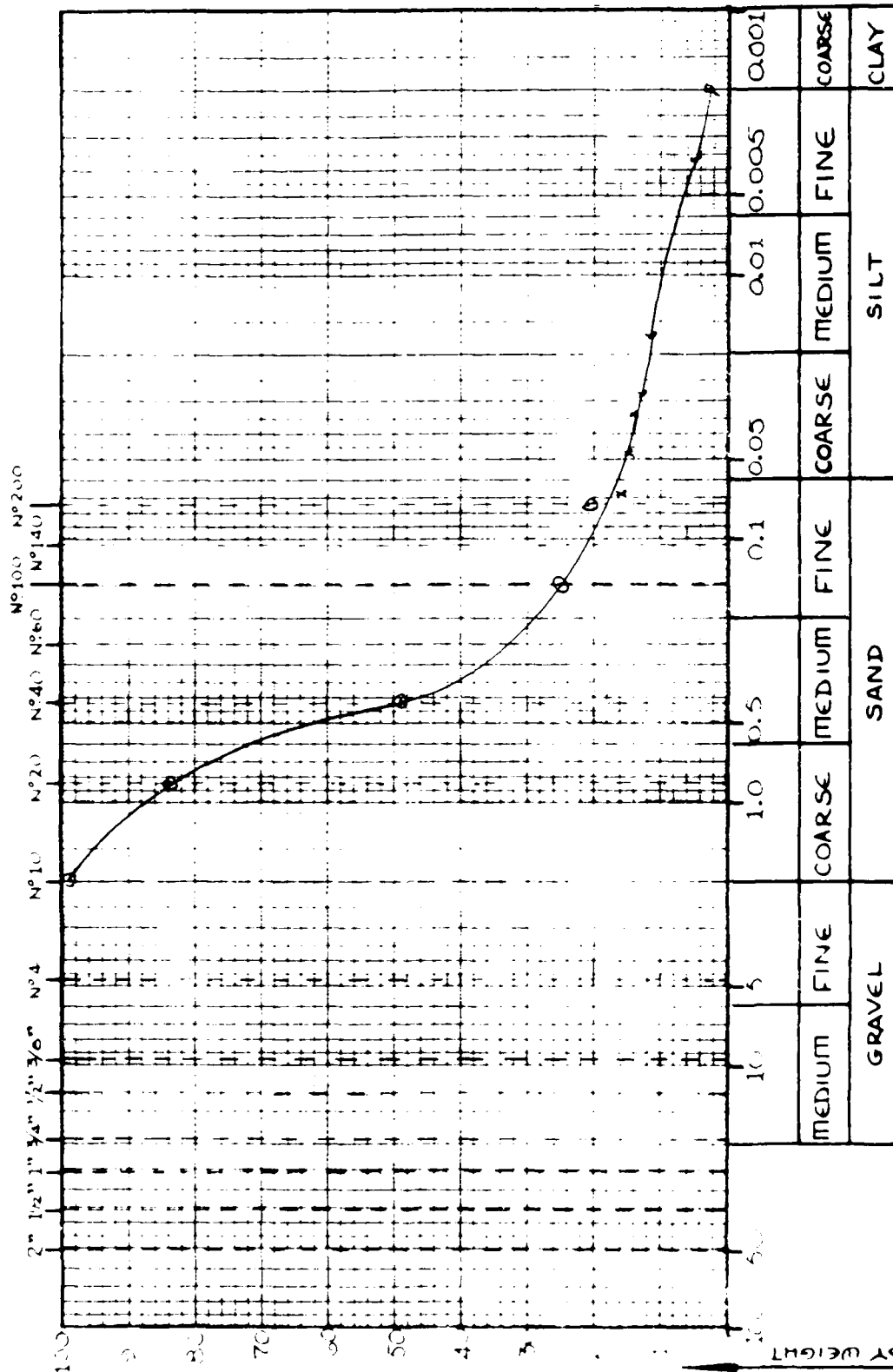
FILE NO: 1604-1
 SAMPLE NO: RB 22-2
 DATE: 146'-145'
 BY:

GRAVEL	%
SAND	%
SILT	%
CLAY	%

DESCRIPTION:

COMMENTS

- SIEVE SIZES -



M.I.T. CLASSIFICATION
 - GRAIN SIZE (mm) -

140-145

BY:

A.S.T.M. D 422-63.

REMARKS: _____

RB 22-2

140'-145'

FILE NO: _____
SAMPLE NO: _____
DATE: _____
BY: _____

- SIEVE ANALYSIS -

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT	
			RETAINED	PASSING
3 IN.				
2 1/2 IN.				
2 IN.				
1 1/2 IN.				
1 IN.				
3/4 IN.				
1/2 IN.				
3/8 IN.				
NO. 4				100.0
NO. 10	0.7	1.4		98.6
NO. 20	7.3	14.6		84.0
NO. 40	17.3	34.6		49.4
NO. 60				
NO. 100	12.1	24.2		25.2
NO. 140				
NO. 200	2.2	4.4		20.8
PAN	10.4	20.8		0
TOTAL	50.0	100.0		
REMARKS _____				

GRAIN SIZE CHART

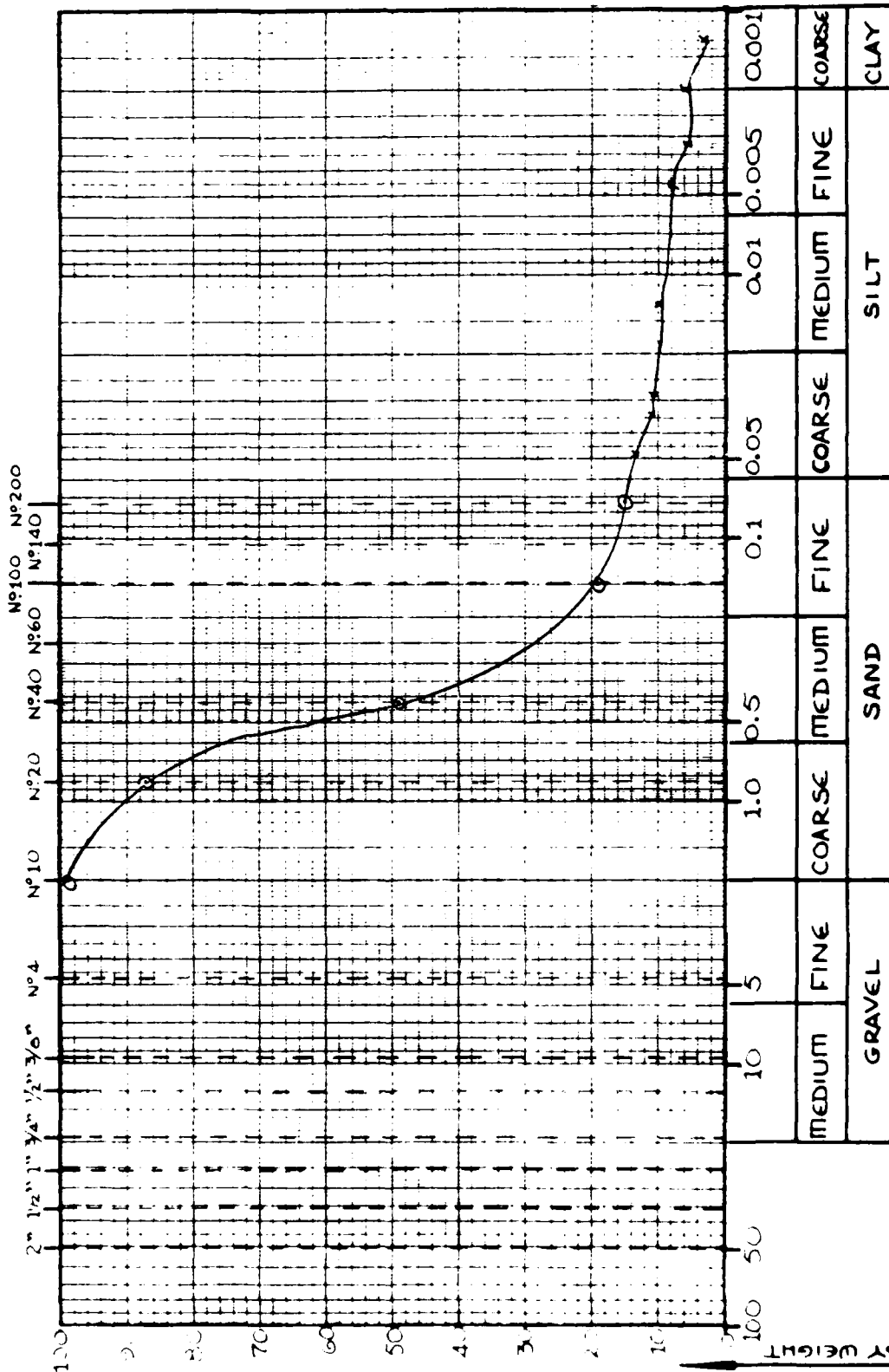
FILE NO: 1604-1
 SAMPLE NO: RB 22-3
 DATE: 175'-180'
 BY:

GRAVEL	%
SAND	86%
SILT	8%
CLAY	6%

DESCRIPTION:

COMMENTS

- SIEVE SIZES -



M.I.T. CLASSIFICATION
 - GRAIN SIZE (mm) -

22-3

175-180

FILE NO: _____

SAMPLE NO: _____

DATE: _____

BY: _____

HYDROMETER ANALYSIS

ASTM. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R _H	TEMP. °C	R _H + C _m C _d	DIA- METER (mm)	L	K	N (%)	N ₁ (%)
		1/2	6.5	—	1068	6.9	15.1	.0124	13.8	
		1	6.0	—	1048	6.4	15.2	"	12.8	
		2	5.0	—	1034	5.4	15.3	"	10.8	
		3	5.0	28	1028	5.4	15.3	"	10.8	
		14	4.5	—	1013	4.9	15.4	"	9.8	
		21	4.5	—	1011	4.9	15.4	"	9.8	
		118	3.5	28	10045	3.9	15.5	"	7.8	
	0100	240	3.1	27	10032	3.1	15.6	.0126	6.2	
	0730	630	3.8	24.5	10020	2.8	15.5	.0130	5.6	
	1930	1350	1.0	28	10013	1.4	16.0	.0124	2.8	

DESCRIPTION: _____

SPECIFIC GRAVITY, G_s : ASSUMED = _____; CALCULATED = _____MENISCUS CORRECTION, C_m : _____DISPERSING AGENT CORRECTION, C_d : _____DRY WEIGHT OF SOIL, U_s : _____

% < N°60 SIEVE: _____

$$N_1 = \left(\frac{\% < N°60}{100} \right) N = \text{_____} N \text{ (COMBINED ANALYSIS).}$$

$$N = R \frac{G}{G-1} \times \frac{100}{U_s} = R \text{ _____}$$

REMARKS: _____

22-3

195-150

FILE NO: _____
 SAMPLE NO: _____
 DATE: _____
 BY: _____

- SIEVE ANALYSIS -

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT	
			RETAINED	PASSING
3 IN.				
2 1/2 IN.				
2 IN.				
1 1/2 IN.				
1 IN.				
3/4 IN.				
1/2 IN.				
3/8 IN.				
NO. 4				100.0
NO. 10	0.3	0.6		99.4
NO. 20	5.4	10.8		88.6
NO. 40	20.0	40.6		48.6
NO. 60				
NO. 100	14.8	29.6		19.0
NO. 140				
NO. 200	1.8	3.6		15.4
PAN	7.7	15.4		0
TOTAL	50.0	100.0		
REMARKS _____				

23-1
80-90

FILE NO:	
SAMPLE NO:	
DATE:	
BY:	

HYDROMETER ANALYSIS

2030

AST.M. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R _H	TEMP. °C	R _H = R _H + (C _m C _d)	DIA- METER (mm)	L	K	N (%)	N ₁ (%)
		1/2	28	—	28.4	.059	11.5	.0124	56.8	
		1	24	—	24.4	.1043	12.2	"	48.4	
		2	20	—	20.4	.1031	12.9	"	40.8	
		3	19	28	19.4	.1026	13.0	"	38.8	
		14	15	—	15.4	.1012	13.7	"	30.8	
		55	10	28	10.4	.1063	14.5	"	20.8	
		140	7	28	7.4	.10040	15.0	"	14.8	
	0100	240	6	27	6.0	.10033	15.2	.0126	12.0	
	0730	660	5.0	24.5	4.0	.10020	15.3	.0130	8.0	
	1930	1380	1.5	28	1.9	.10013	15.9	.0124	3.8	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s : ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, C_m : _____

DISPERSING AGENT CORRECTION, C_d : _____

DRY WEIGHT OF SOIL, U_s : _____

% < N#60 SIEVE: _____

$N_1 = \left(\frac{\% < N\#60}{100} \right) N =$ _____ N (COMBINED ANALYSIS).

$N = R \frac{G}{G-1} \times \frac{100}{U_s} = R$ _____

REMARKS: _____

23-1

50-90

FILE NO: _____

SAMPLE NO: _____

DATE: _____

BY: _____

- SIEVE ANALYSIS -

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT	
			RETAINED	PASSING
3 IN.				
2 1/2 IN.				
2 IN.				
1 1/2 IN.				
1 IN.				
3/4 IN.				
1/2 IN.				
3/8 IN.				
NO. 4				100.0
NO. 10	0.3	0.6		99.4
NO. 20	0.3	0.6		98.8
NO. 40	0.5	1.0		97.8
NO. 60				
NO. 100	5.2	10.4		87.4
NO. 140				
NO. 200	11.3	22.6		64.8
PAN	32.4	64.8		0
TOTAL	50.0	100.0		
REMARKS _____				

23-2

155-160

FILE NO: _____

SAMPLE NO: _____

DATE: _____

BY: _____

HYDROMETER ANALYSIS

ASTM D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R _H	TEMP. °C	R _H = R _H + (CmCd)	DIA- METER (mm)	L	K	N (%)	N ₁ (%)
		1/2	36	—	36.4	1056	10.2	.0124	72.6	
		1	34	—	34.4	1040	10.5	"	68.8	
		2	32	—	32.4	1024 1029	10.9	"	64.6	
		3	30.5	28	30.9	1008 1023	11.1	"	60.8	
		14	26.5	—	26.9	0916	11.8	"	53.8	
		43	22	28	22.4	.0067	12.5	"	44.8	
		129	18.5	28	18.9	.0039	13.1	"	37.8	
	0100	255	16.0	27	16.0	.0029	13.5	.0126	32.0	
	0730	645	14.0	24.5	13.0	.0019	13.8	.0130	26.0	
	1930	1365	14.0	28	14.4	.0012	13.8	.0124	28.8	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____MENISCUS CORRECTION, C_m: _____DISPERSING AGENT CORRECTION, C_d: _____DRY WEIGHT OF SOIL, U_s: _____

% < N°60 SIEVE: _____

$$N_1 = \left(\frac{\% < N°60}{100} \right) N = \text{_____} N \text{ (COMBINED ANALYSIS).}$$

$$N = R \frac{G}{G-1} \times \frac{100}{U_s} = R \text{ _____}$$

REMARKS: _____

23-2

155-160

FILE NO: _____
SAMPLE NO: _____
DATE: _____
BY: _____

- SIEVE ANALYSIS -

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT	
			RETAINED	PASSING
3 IN.				
2 1/2 IN.				
2 IN.				
1 1/2 IN.				
1 IN.				
3/4 IN.				
1/2 IN.				
3/8 IN.				
NO. 4				100.0
NO. 10	0.6	1.2		98.8
NO. 20	1.7	3.4		95.4
NO. 40	1.3	2.6		92.8
NO. 60				
NO. 100	3.3	6.6		86.2
NO. 140				
NO. 200	2.5	5.0		81.2
PAN	40.6	81.2		0
TOTAL	50.6	100.0		
REMARKS _____				

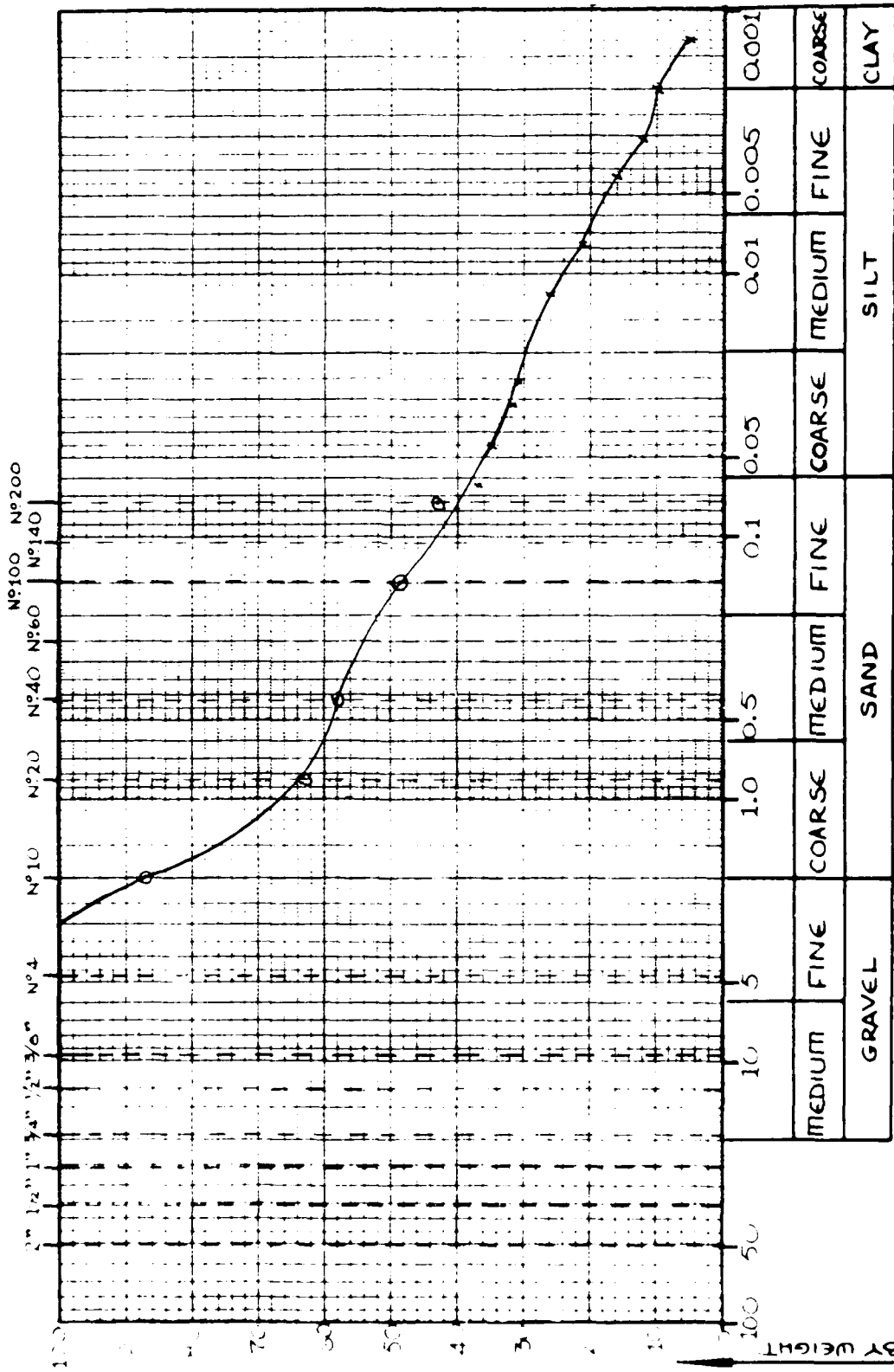
GRAIN SIZE CHART

FILE NO: 1604-1
 SAMPLE NO: RB 23-3
 DATE: 175-180
 BY:

GRAVEL	%
SAND	62%
SILT	28%
CLAY	10%

DESCRIPTION:
 COMMENTS:

- SIEVE SIZES -



U.T. CLASSIFICATION
 - GRAIN SIZE (mm) -

23-3

175-180

FILE NO: _____

SAMPLE NO: _____

DATE: _____

BY: _____

HYDROMETER ANALYSIS

A.S.T.M. D422-63

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R _H	TEMP. °C	R _H = R _H + (CmCd)	DIA- METER (MM)	L	K	N (%)	N ₁ (%)
		1/2	18	—	1064	18.4	13.2	.0124	36.8	
		1	17	—	1045	17.4	13.3	"	34.8	
		2	16	—	1032	16.4	13.5	"	32.8	
		3	15	28	1026	15.4	13.7	"	30.8	
		14	12.5	—	.012	12.9	14.1	"	25.8	
		35	10.0	28	.0078	10.4	14.5	"	20.8	
		122	7.5	28	.0043	7.9	14.9	"	15.8	
	6/02	245	6.0	27	10031	6.0	15.2	.0126	12.0	
	0730	635	6.0	24.5	10020	5.0	15.2	.0130	10.0	
	1930	1355	2.0	28	10013	2.4	15.8	.0124	4.8	

DESCRIPTION: _____

SPECIFIC GRAVITY, G_s : ASSUMED = _____; CALCULATED = _____MENISCUS CORRECTION, C_m : _____DISPERSING AGENT CORRECTION, C_d : _____DRY WEIGHT OF SOIL, U_s : _____

% < N°60 SIEVE: _____

$$N_1 = \left(\frac{\% < N°60}{100} \right) N = \text{_____} N \text{ (COMBINED ANALYSIS)}$$

$$N = R \frac{G}{G-1} \times \frac{100}{U_s} = R \text{ _____}$$

REMARKS: _____

AD-A156 283

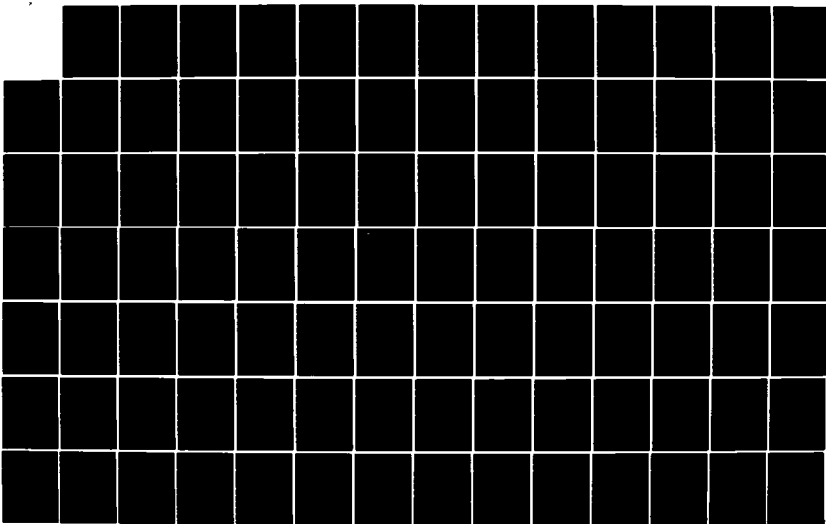
INSTALLATION RESTORATION PROGRAM PHASE II (STAGE 2-1)
VOLUME 2(U) RADIAN CORP AUSTIN TX R W BAUER MAY 85
F33615-83-D-4001

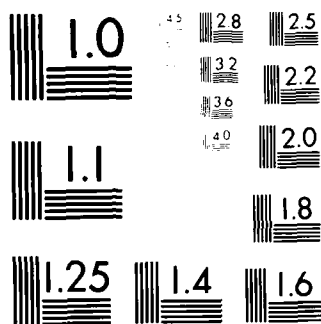
06/10

UNCLASSIFIED

F/G 13/2

NL





MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

23-3

175-180

FILE NO: _____
SAMPLE NO: _____
DATE: _____
BY: _____

- SIEVE ANALYSIS -

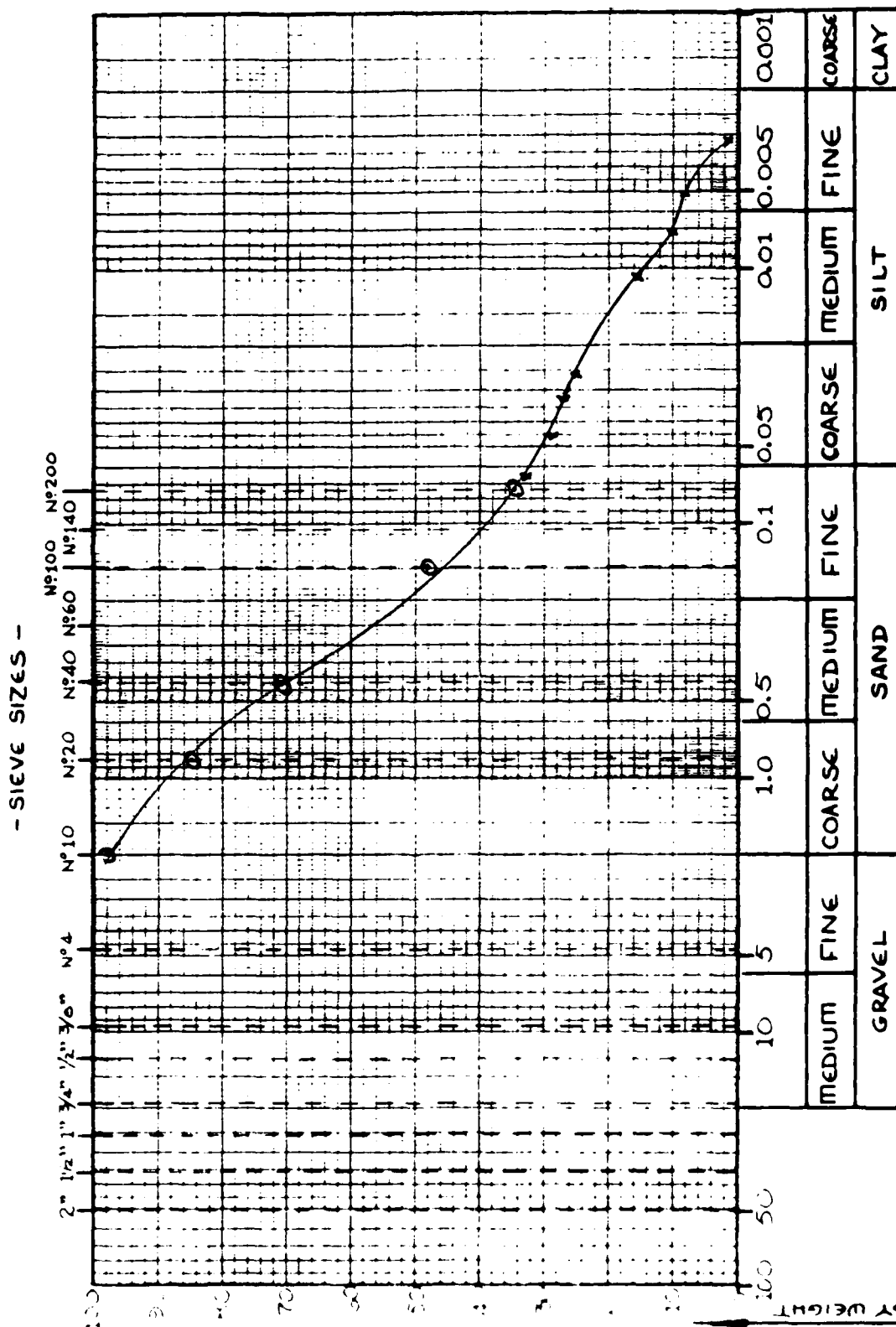
SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT	
			RETAINED	PASSING
3 IN.				
2 1/2 IN.				
2 IN.				
1 1/2 IN.				
1 IN.				
3/4 IN.				
1/2 IN.				
3/8 IN.				
NO. 4				100.0
NO. 10	6.6	13.2		86.8
NO. 20	12.1	24.2		75.6
NO. 40	2.3	4.6		95.0
NO. 60				
NO. 100	5.0	10.0		89.0
NO. 140				
NO. 200	2.4	4.8		94.2
PAN	21.6	43.2		0
TOTAL	50.0	100.0		
REMARKS _____				

FILE NO: 1604-1
SAMPLE NO: RB 24
DATE: 85'-90'
BY: _____

GRAVEL	2 %
SAND	66 %
SILT	32 %
CLAY	0 %

DESCRIPTION:

COMMENTS



M.I.T. CLASSIFICATION
-GRAIN SIZE (mm)-

RB-74

85-90

FILE NO: _____

SAMPLE NO: _____

DATE: _____

BY: _____

HYDROMETER ANALYSIS

1155

ASTM D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R _H	TEMP. °C	R _H = R _H + (C _m C _d)	DIA- METER (mm)	L	K	N (%)	N ₁ (%)
		1/4	15		16.3	0.064	13.8	.0122	32.6	
		1	17		14.3	0.046	14	"	28.6	
		2	12		13.3	0.033	14.4	"	26.6	
		3	11		12.3	0.027	14.3	"	24.6	
		19	65	30	7.8	0.011	15.1	"	15.6	
		44	3.5	-	4.8	0.0072	15.5	"	9.6	
		90	3.0	29	3.9	0.0051	15.6	.0123	7.8	
	0400	250	0	29	0.4	0.0032	16.3	.0124	0.8	
	0930	280	0	27	0	0.0030	16.3	.0126	0	
	2030	1240	-1	30	0.3			.0122		

DESCRIPTION: _____

SPECIFIC GRAVITY, G_s : ASSUMED = _____; CALCULATED = _____MENISCUS CORRECTION, C_m : _____DISPERSING AGENT CORRECTION, C_d : _____DRY WEIGHT OF SOIL, U_s : _____

% < N°60 SIEVE: _____

$$N_1 = \left(\frac{\% < N°60}{100} \right) N = \text{_____} N \text{ (COMBINED ANALYSIS)}$$

$$N = R \frac{G}{G-1} \times \frac{100}{U_s} = R \text{ _____}$$

REMARKS: _____

R13 24

85-90

FILE NO: _____
SAMPLE NO: _____
DATE: _____
BY: _____

- SIEVE ANALYSIS -

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT	
			RETAINED	PASSING
3 IN.				
2 1/2 IN.				
2 IN.				
1 1/2 IN.				
1 IN.				
3/4 IN.				
1/2 IN.				
3/8 IN.				
NO. 4				100.0
NO. 10	1.2	2.4		97.6
NO. 20	6.2	12.4		85.2
NO. 40	7.3	14.6		70.6
NO. 60				
NO. 100	11.2	22.4		48.2
NO. 140				
NO. 200	6.7	13.4		34.8
PAN	17.6	24.8		0
TOTAL	50.0	100.0		
REMARKS _____				

GRAIN SIZE CHART

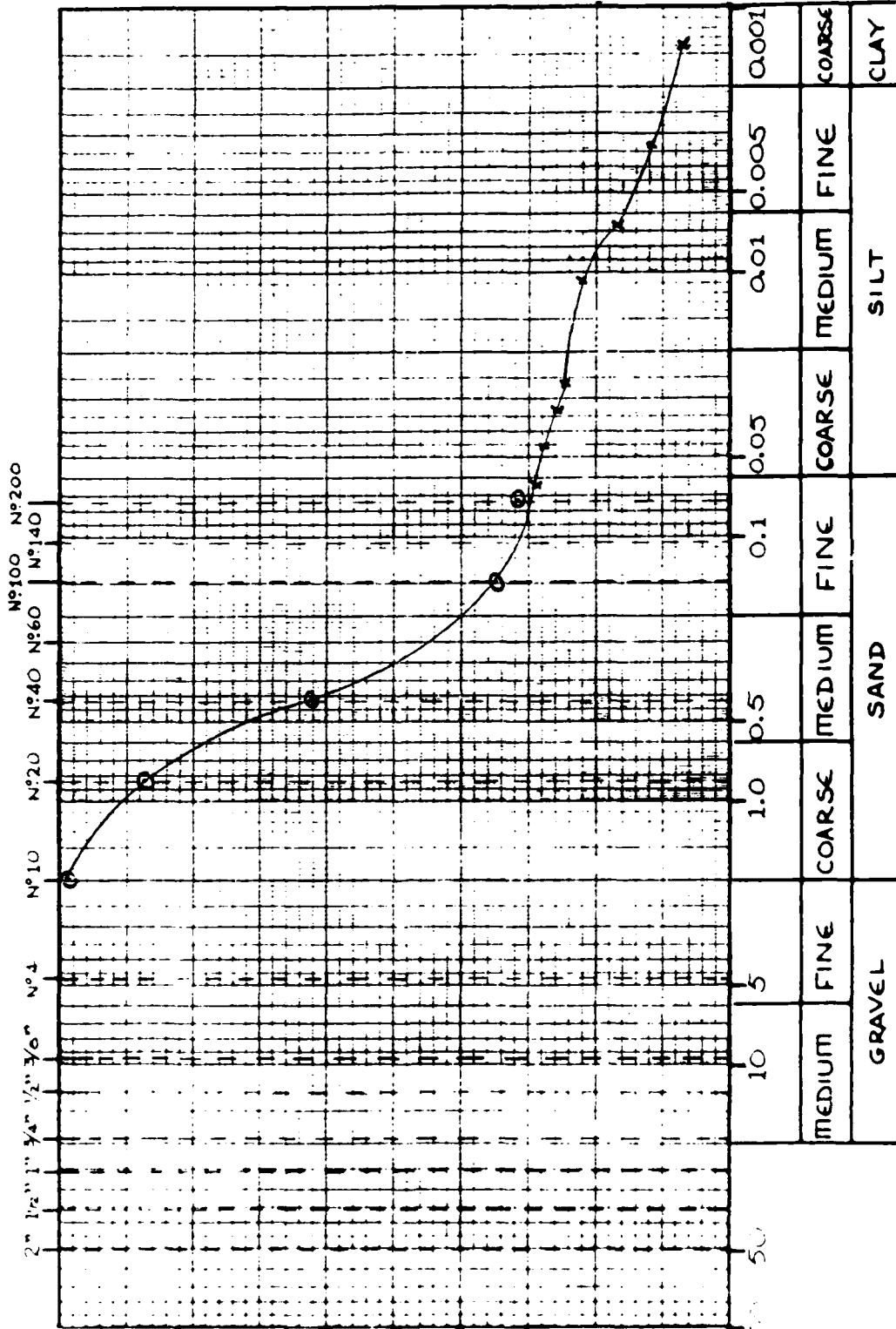
FILE NO: 1604-1
 SAMPLE NO: RB 24-2
 DATE: 95'-160'
 BY:

GRAVEL	%
SAND	71%
SILT	21%
CLAY	8%

DESCRIPTION:

COMMENTS

- SIEVE SIZES -



M.I.T. CLASSIFICATION
 - GRAIN SIZE (mm) -

% FINER BY WEIGHT

RA 24-2

95-110

HYDROMETER ANALYSIS

FILE NO: _____

SAMPLE NO: _____

DATE: _____

BY: _____

1725

ASTM D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R _H	TEMP. °C	R _H = R _H + (C _m C _d)	DIA- METER (mm)	L	K	N (%)	N ₁ (%)
		1/2	13		14.3	0.065	14.0	.0122	28.6	
		1	12.5		13.8	0.046	14.0	"	27.6	
		2	12		13.3	0.033	14.2	"	26.6	
		3	11		12.3	0.027	14.3	"	24.6	
		19	9.5	30	10.8	0.011	14.5	"	21.6	
		50	7.0	—	8.3	0.0067	15.0	"	16.6	
	0400	220	5.4	24	5.8	0.0033	15.3	.0124	11.6	
	0900	250	5.0	27	5.0	0.0031	15.3	.0126	10.0	
	2030	1210	2.0	30	3.3	0.0014	15.8	.0122	6.6	

DESCRIPTION: _____

SPECIFIC GRAVITY, G_s : ASSUMED = _____; CALCULATED = _____MENISCUS CORRECTION, C_m : _____DISPERSING AGENT CORRECTION, C_d : _____DRY WEIGHT OF SOIL, U_s : _____

% < NO. 60 SIEVE: _____

 $N_1 = \left(\frac{\% < \text{NO. 60}}{100} \right) N = \text{_____} N \text{ (COMBINED ANALYSIS)}$ $N = R \frac{G}{G-1} \times \frac{100}{U_s} = R \text{_____}$

REMARKS: _____

RB 24-2

95-110

FILE NO: _____
 SAMPLE NO: _____
 DATE: _____
 BY: _____

- SIEVE ANALYSIS -

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT	
			RETAINED	PASSING
3 IN.				
2 1/2 IN.				
2 IN.				
1 1/2 IN.				
1 IN.				
3/4 IN.				
1/2 IN.				
3/8 IN.				
NO. 4				100
NO. 10	0.6	1.2		99.8
NO. 20	5.8	11.6		88.2
NO. 40	12.4	24.8		75.2
NO. 60				
NO. 100	13.6	27.2		72.8
NO. 140				
NO. 200	1.7	3.4		96.6
PAN	15.9	31.8		
TOTAL	50.0	100		
REMARKS _____				

GRAIN SIZE CHART

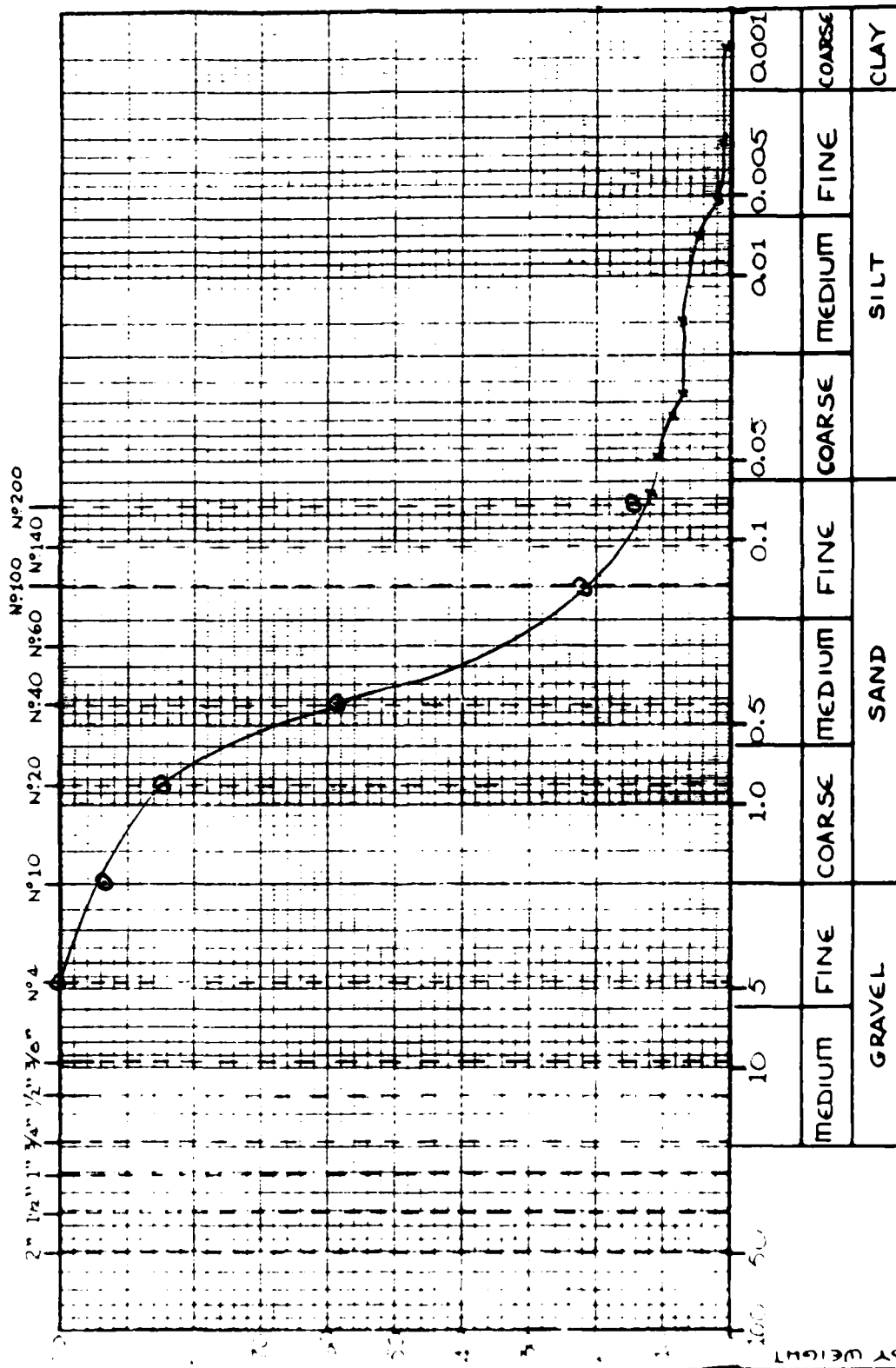
FILE NO: 1604-1
 SAMPLE NO: RB 24-3
 DATE: 120'-130'
 BY: _____

GRAVEL	0%
SAND	83%
SILT	10%
CLAY	1%

DESCRIPTION:

COMMENTS

- SIEVE SIZES -



M.I.T. CLASSIFICATION
 - GRAIN SIZE (mm) -

PB 24-3

120-130

FILE NO: _____

SAMPLE NO: _____

DATE: _____

BY: _____

HYDROMETER ANALYSIS

1205

AST.M. D 422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R _H	TEMP. °C	R _H + R _H + (CmCd)	DIA- METER (mm)	L	K	N (%)	N ₁ (%)
		1/2	4.5		5.8	0.067	15.3	.0122	11.6	
		1	4.0		5.3	0.048	15.5	"	10.6	
		2	3.0		4.3	0.034	15.6	"	8.6	
		3	2.0		3.3	0.028	15.8	4	6.6	
		11	2.0	30	3.3	0.015	15.8	"	6.6	
		36	1.0	—	2.3	0.0081	16.0	"	4.6	
		80	0	29	0.9	0.0055	16.1	.0123	1.8	
	0400	240	0	29	0.4	0.0032	16.1	.0124	0.8	
	0930	270	0	27	0	0.0031	16.1	.0126	0	
	2030	1230	-1	30	0.3	0.0014	16.3	.0122	0.6	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____MENISCUS CORRECTION, C_m: _____DISPERSING AGENT CORRECTION, C_d: _____DRY WEIGHT OF SOIL, U_s: _____

% < N°60 SIEVE: _____

$$N_1 = \left(\frac{\% < N^\circ 60}{100} \right) N = \text{_____} N \text{ (COMBINED ANALYSIS).}$$

$$N = R \frac{G}{G-1} \times \frac{100}{U_s} = R \text{ _____}$$

REMARKS: _____

RB 24-3

120 - 130

FILE NO: _____

SAMPLE NO: _____

DATE: _____

BY: _____

- SIEVE ANALYSIS -

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT	
			RETAINED	PASSING
3 IN.				
2 1/2 IN.				
2 IN.				
1 1/2 IN.				
1 IN.				
3/4 IN.				
1/2 IN.				
3/8 IN.				
NO. 4				100.0
NO. 10	2.9	2.9		97.1
NO. 20	4.8	7.6		92.4
NO. 40	12.8	25.6		74.4
NO. 60				
NO. 100	18.5	37.0		63.0
NO. 140				
NO. 200	3.3	40.3		59.7
PAN	7.7	48.0		
TOTAL	50.0	100.0		
REMARKS _____				

GRAIN SIZE CHART

FILE NO:

SAMPLE NO: RB 25-1

DATE: 150-160

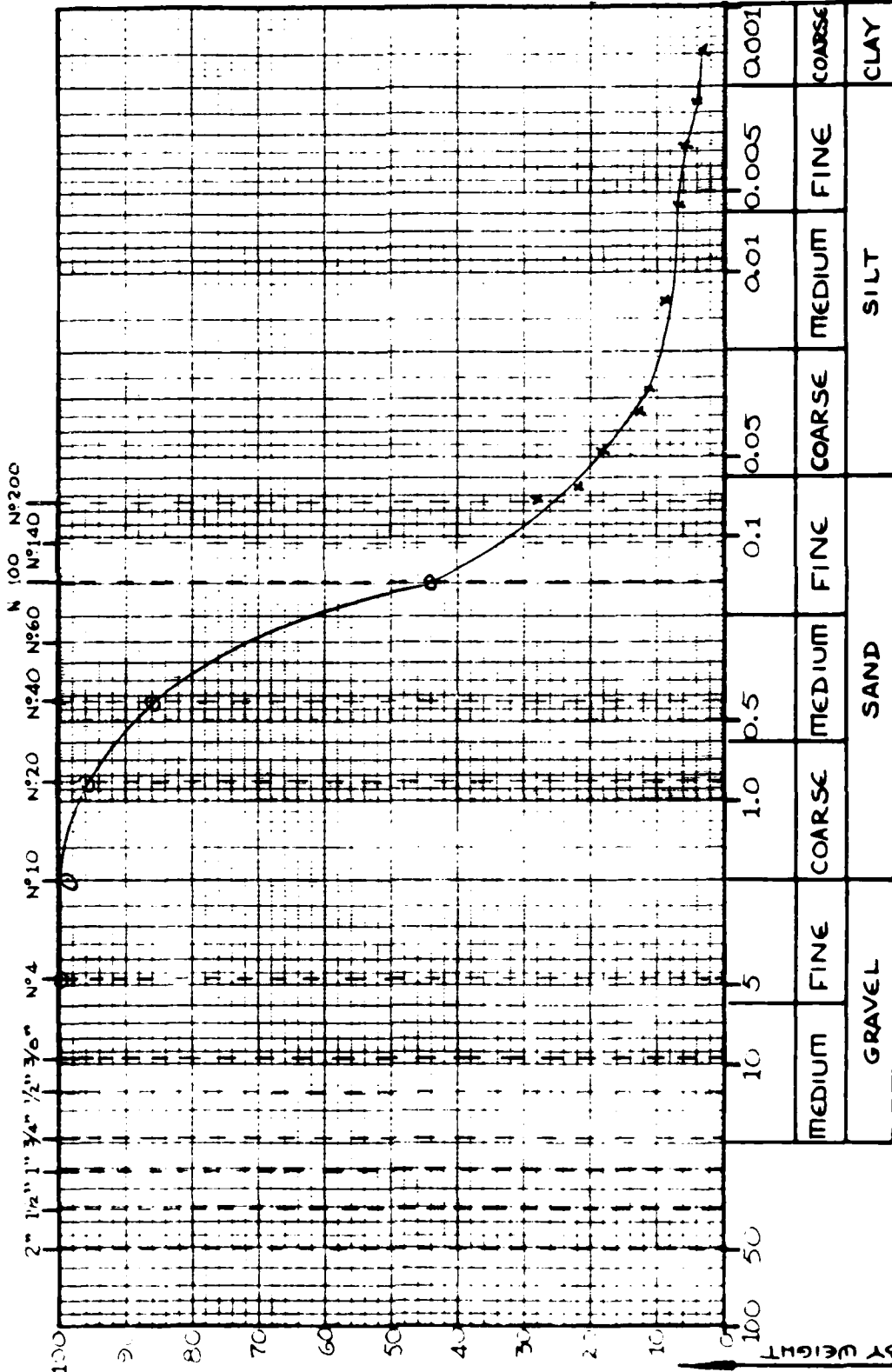
BY:

GRAVEL	1 %
SAND	77 %
SILT	10 %
CLAY	4 %

DESCRIPTION:

COMMENTS

- SIEVE SIZES -



RB25-1

150-160

FILE NO: _____
 SAMPLE NO: _____
 DATE: _____
 BY: _____

HYDROMETER ANALYSIS

AST.M. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R _H	TEMP. °C	R _H = R _H + (CmCd)	DIA- METER (mm)	L	K	N (%)	N ₁ (%)
		1/2	10.5		10.9	0.067	14.4	0.0124	21.8	
		1	8.5		8.9	0.048	14.7	"	17.8	
		2	6.0		6.4	0.034	15.2	"	12.8	
		3	5.2	28	5.6	0.028	15.3	"	11.2	
		14	4.0	—	4.4	0.017	15.5	"	8.8	
		75	3	28	3.4	0.0057	15.6	"	6.8	
		235	3	26.5	2.8	0.0033	15.6	0.0127	5.6	
		475	3	25	2.1	0.0023	15.6	0.0129	4.2	
		1135	1.5	27	1.5	0.0015	15.9	0.0126	3.0	

DESCRIPTION: _____

SPECIFIC GRAVITY, G_s : ASSUMED = _____; CALCULATED = _____MENISCUS CORRECTION, C_m : _____DISPERSING AGENT CORRECTION, C_d : _____DRY WEIGHT OF SOIL, U_s : _____

% < N#60 SIEVE: _____

$$N_1 = \left(\frac{\% < N\#60}{100} \right) N = \text{_____} N \text{ (COMBINED ANALYSIS).}$$

$$N = R \frac{G}{G-1} \times \frac{100}{U_s} = R \text{_____}$$

REMARKS: _____

RB 25-1

150-160

FILE NO: _____

SAMPLE NO: _____

DATE: _____

BY: _____

- SIEVE ANALYSIS -

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT	
			RETAINED	PASSING
3 IN.				
2 1/2 IN.				
2 IN.				
1 1/2 IN.				
1 IN.				
3/4 IN.				
1/2 IN.				
3/8 IN.				
NO. 4				100
NO. 10	04	0.8		99.2
NO. 20	17	3.4		95.8
NO. 40	5.0	10.0		90.0
NO. 60				
NO. 100	21.0	42.0		58.0
NO. 140				
NO. 200	9.8	15.6		84.4
PAN	14.1	28.2		
TOTAL	50.0	100.0		
REMARKS _____				

GRAIN SIZE CHART

FILE NO: _____

SAMPLE NO: RB 25-3

DATE: 187-190

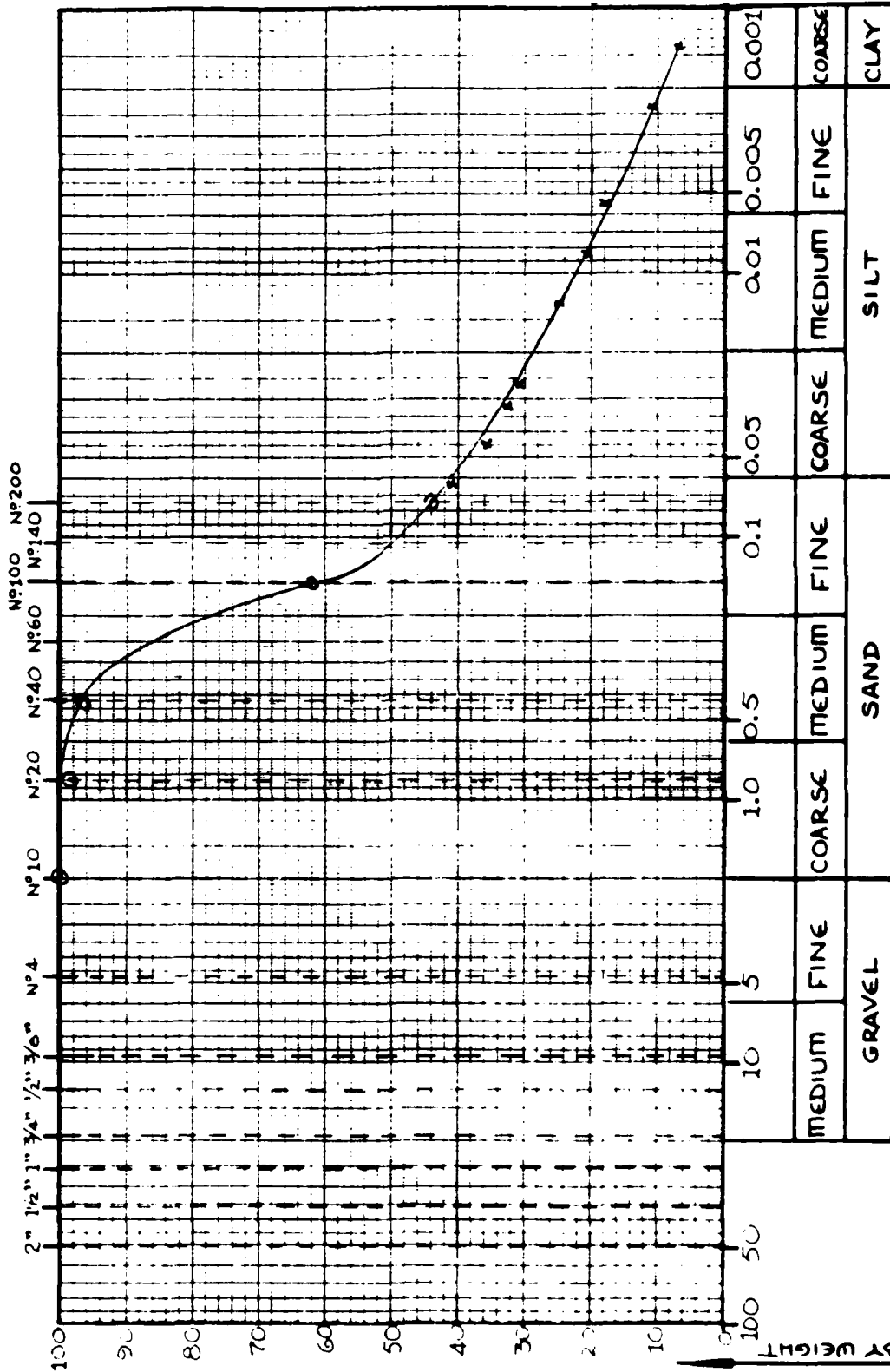
BY: _____

GRAVEL	%
SAND	59%
SILT	31%
CLAY	10%

DESCRIPTION: _____

COMMENTS _____

- SIEVE SIZES -



M.I.T. CLASSIFICATION
- GRAIN SIZE (mm) -

RB75-3

187-190

HYDROMETER ANALYSIS

FILE NO: _____

SAMPLE NO: _____

DATE: _____

BY: _____

A.S.T.M. D 422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R _H	TEMP. °C	R _H = R _H + (C _{MCd})	DIA- METER (mm)	L	K	N (%)	N ₁ (%)
		1/2	20		20.3	0.084	12.9	.0125	40.6	
		1	17.5		17.8	0.045	13.2	"	35.6	
		2	16		16.3	0.032	13.5	"	32.6	
		3	15	27.6	15.3	0.027	13.7	"	30.6	
		14	12	—	12.3	0.013	14.2	"	24.6	
		34	10	—	10.3	0.0082	14.5	"	20.6	
		76	8.5	28	8.9	0.0055	14.7	.0124	17.8	
		345	6.0	26	5.6	0.0024	15.2	.0127	11.2	
		1300	3.0	28	3.4	0.0014	15.6	.0124	6.8	

DESCRIPTION: _____

SPECIFIC GRAVITY γ_s ; G_s : ASSUMED = _____; CALCULATED = _____MENISCUS CORRECTION, C_m : _____DISPERSING AGENT CORRECTION, C_d : _____DRY WEIGHT OF SOIL, U_s : _____

% < N°60 SIEVE: _____

 $N_1 = \left(\frac{\% < N°60}{100} \right) N = \text{_____} N$ (COMBINED ANALYSIS). $N = R \frac{G}{G-1} \times \frac{100}{U_s} = R \text{_____}$

REMARKS: _____

RB 25-3

187-190

- SIEVE ANALYSIS -

FILE NO: _____

SAMPLE NO: _____

DATE: _____

BY: _____

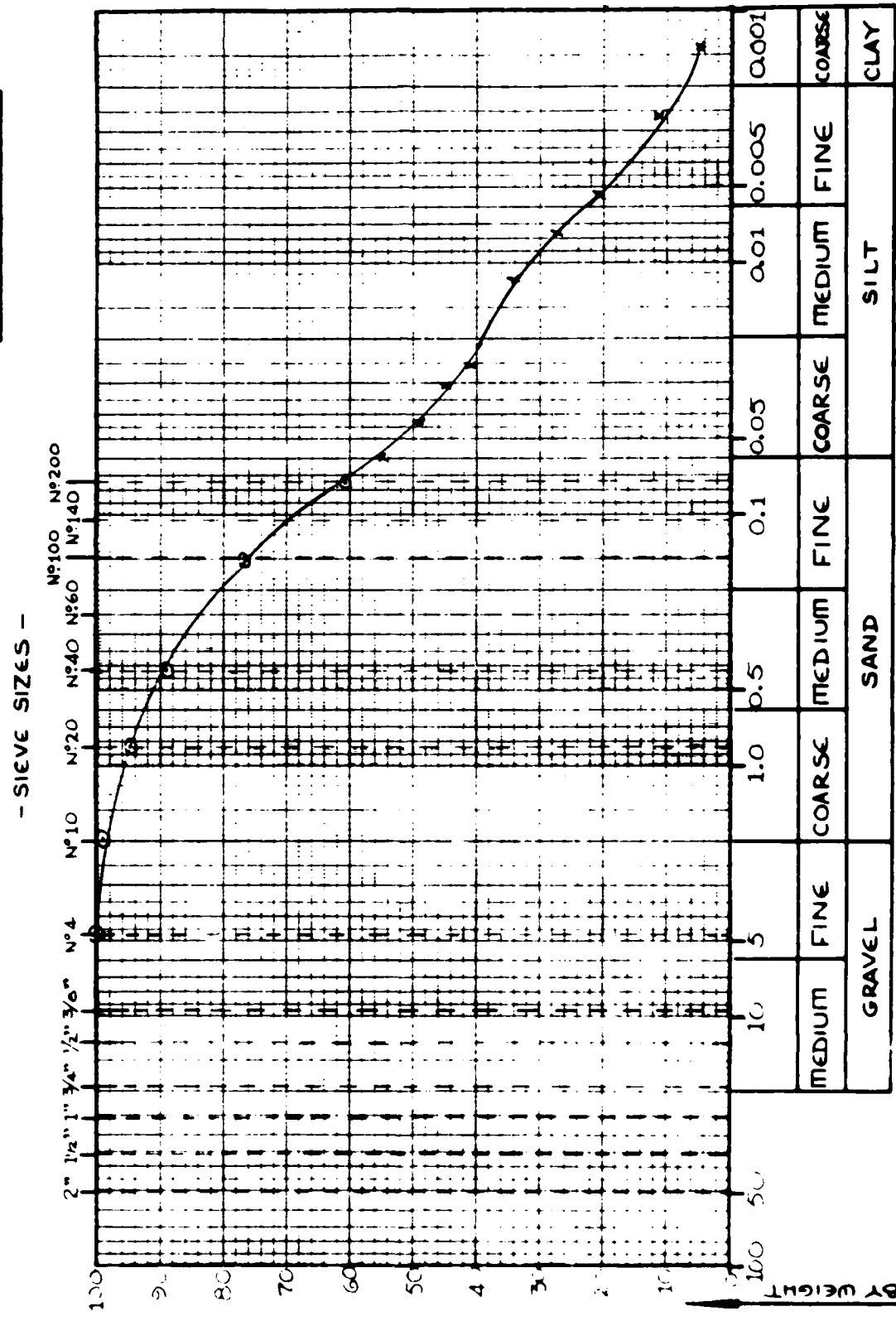
SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT	
			RETAINED	PASSING
3 IN.				
2 1/2 IN.				
2 IN.				
1 1/2 IN.				
1 IN.				
3/4 IN.				
1/2 IN.				
3/8 IN.				
NO. 4				
NO. 10	- 0 -			100
NO. 20	0.3	0.6		99.4
NO. 40	1.4	2.0		97.4
NO. 60				
NO. 100	17.4	34.8		65.2
NO. 140				
NO. 200	9.0	43.8		56.2
PAN	2.9	46.7		
TOTAL	50.0	100		
REMARKS _____				

GRAIN SIZE CHART

FILE NO: _____
 SAMPLE NO: RB 26-2
 DATE: 140-150
 BY: _____

GRAVEL	/ %
SAND	43 %
SILT	44 %
CLAY	7 %

DESCRIPTION: _____
 COMMENTS: _____



RB 26-2

140-150

FILE NO: _____

SAMPLE NO: _____

DATE: _____

BY: _____

HYDROMETER ANALYSIS

ASTM D 422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R _H	TEMP. °C	R _H = R _H + (C _m + C _d)	DIA- METER (mm)	L	K	N (%)	N ₁ (%)
		1/2	27		27.3	0.060	11.7	.0125	54.6	
		1	24		24.3	0.044	12.2	"	48.6	
		2	22		22.3	0.031	12.5	"	44.6	
		3	20	27.6	20.3	0.026	12.9	"	40.6	
		14	17.5	—	17.8	0.012	13.2	"	35.6	
		38	13.2	—	13.5	0.0076	14.0	"	27.0	
		80	10	28	10.4	0.0053	14.5	.0124	20.8	
		350	6.5	26	6.1	0.0026	15.1	.0127	12.2	
		1305	2.0	28	2.4	0.0014	15.8	.0124	4.8	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s : ASSUMED = _____; CALCULATED = _____MENISCUS CORRECTION, C_m : _____DISPERSING AGENT CORRECTION, C_d : _____DRY WEIGHT OF SOIL, U_s : _____

% < N°60 SIEVE: _____

$$N_1 = \left(\frac{\% < N°60}{100} \right) N = \text{_____} N \text{ (COMBINED ANALYSIS).}$$

$$N = R \frac{G}{G-1} \times \frac{100}{U_s} = R \text{ _____}$$

REMARKS: _____

RB 26-2

140-150

FILE NO: _____

SAMPLE NO: _____

DATE: _____

BY: _____

- SIEVE ANALYSIS -

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT	
			RETAINED	PASSING
3 IN.				
2 1/2 IN.				
2 IN.				
1 1/2 IN.				
1 IN.				
3/4 IN.				
1/2 IN.				
3/8 IN.				
NO. 4				100
NO. 10	0.4	0.8		99.2
NO. 20	1.9	3.8		97.3
NO. 40	3.3	6.6		90.7
NO. 60				
NO. 100	6.0	12.0		78.7
NO. 140				
NO. 200	9.8	15.6		63.1
PAN	30.6	61.2		
TOTAL	50.0	100.0		
REMARKS _____				

GRAIN SIZE CHART

FILE NO: _____

SAMPLE NO: RB 26-3

DATE: 20

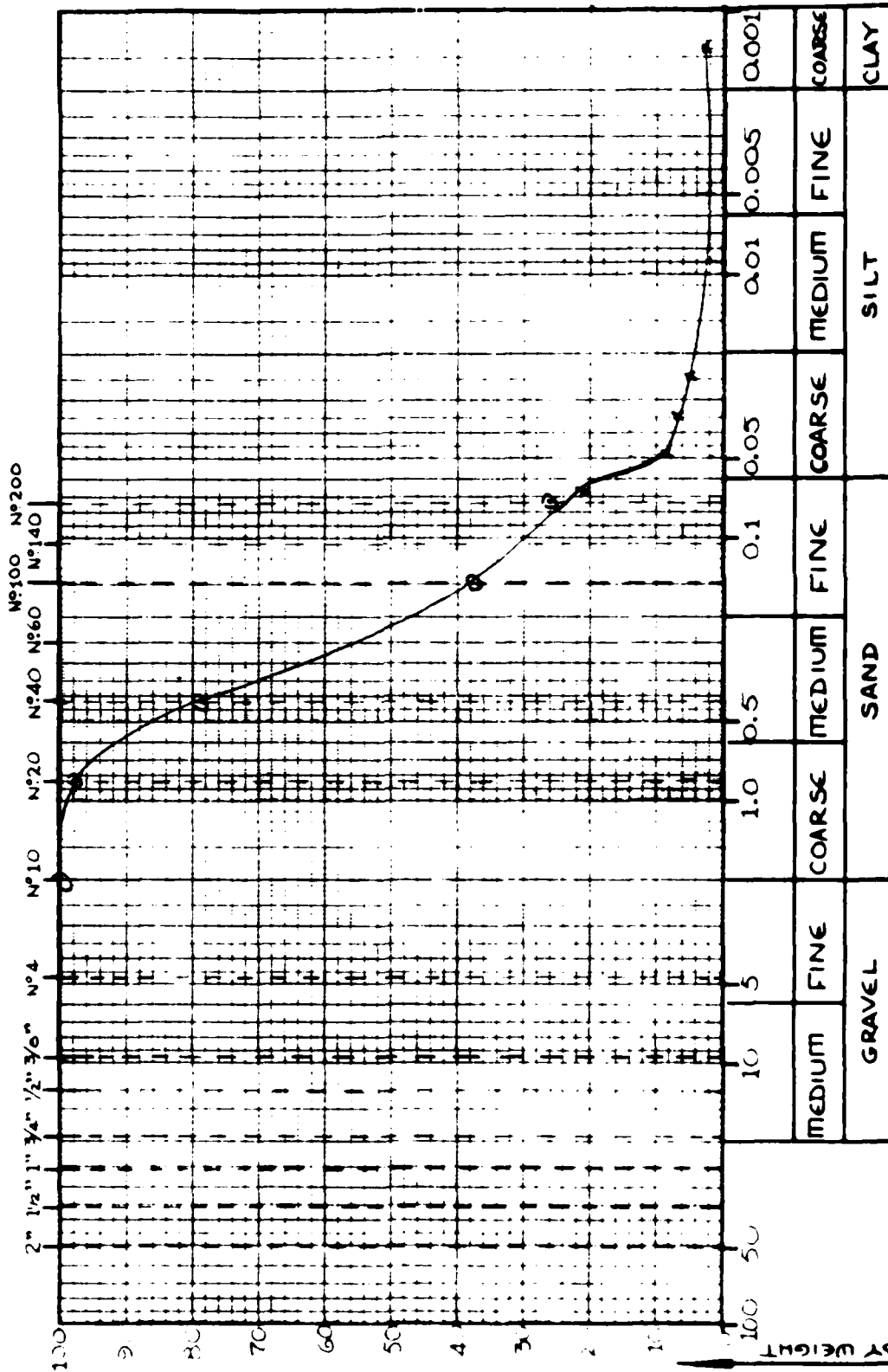
BY: _____

GRAVEL	%
SAND	82 %
SILT	16 %
CLAY	2 %

DESCRIPTION: _____

COMMENTS _____

- SIEVE SIZES -



U.S.T. CLASSIFICATION
- GRAIN SIZE (mm) -

FILE NO: _____
SAMPLE NO: _____
DATE: _____
BY: _____

HYDROMETER ANALYSIS

A.S.T.M. D 422-63.

[illegible]

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s : ASSUMED = _____; CALCULATED = _____

MENISCUS CORRECTION, C_m : _____

DISPERSING AGENT CORRECTION, Cd : _____

DRY WEIGHT OF SOIL, U_s : _____.

% < N° 60 SIEVE : _____.

$$N_1 = \left(\frac{\% \text{ of } N_2O}{100} \right) N = \text{---} N \text{ (COMBINED ANALYSIS).}$$
$$N = R \frac{G}{G-1} \times \frac{100}{U_S} = R \underline{\hspace{2cm}}.$$

REMARKS: _____

RB 20-3
200

FILE NO: _____
SAMPLE NO: _____
DATE: _____
BY: _____

- SIEVE ANALYSIS -

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT	
			RETAINED	PASSING
3 IN.				
2 1/2 IN.				
2 IN.				
1 1/2 IN.				
1 IN.				
3/4 IN.				
1/2 IN.				
3/8 IN.				
NO. 4				
NO. 10	0			100.0
NO. 20	1.7	1.8		98.2
NO. 40	7.7	19.4		80.6
NO. 60				
NO. 100	30.4	41.4		58.6
NO. 140				
NO. 200	5.5	11.0		89.0
PAN	13.2	26.4		
TOTAL	50.0	100.0		
REMARKS _____				

GRAIN SIZE CHART

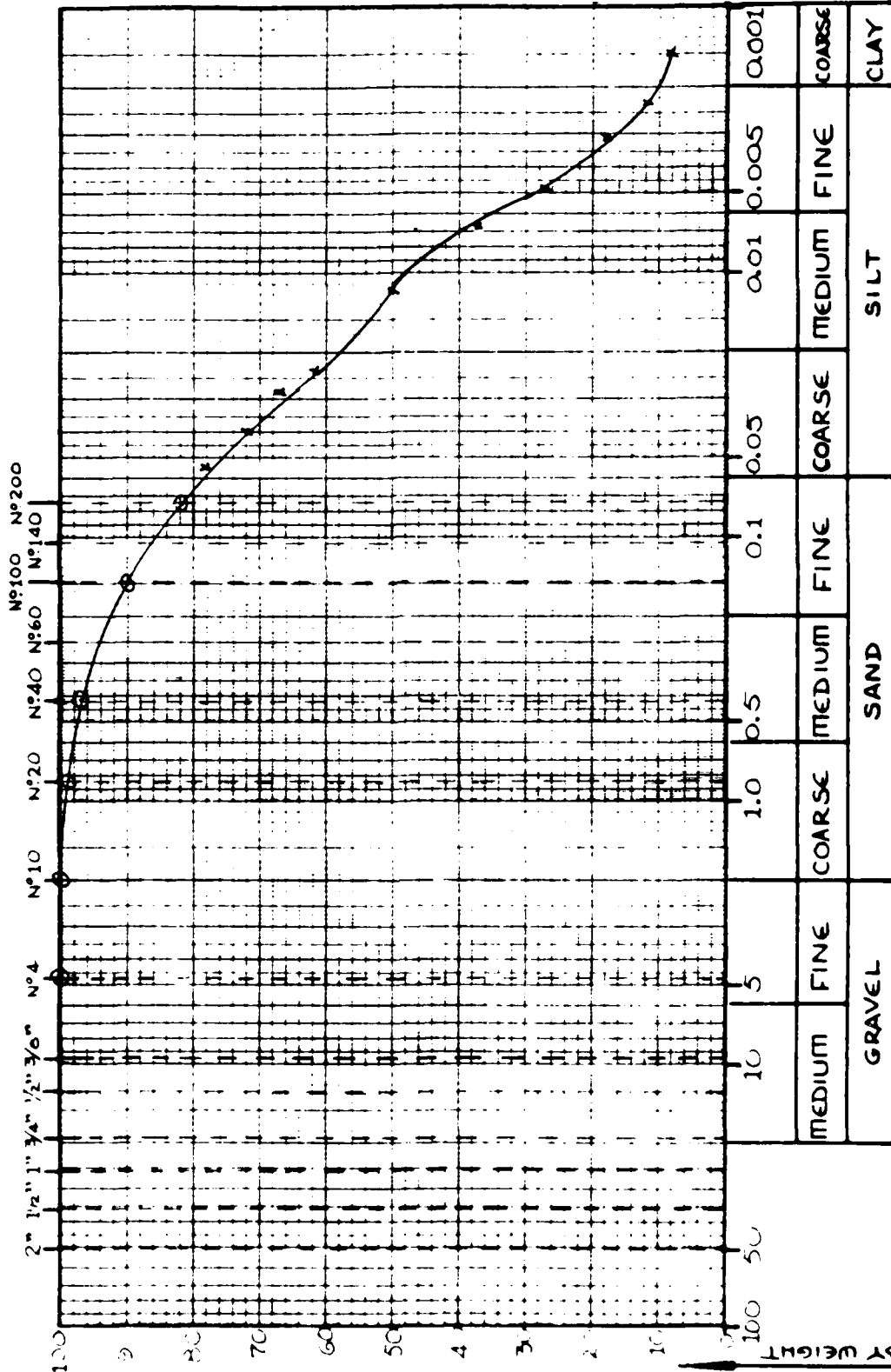
FILE NO: _____
 SAMPLE NO: RB 27-1
 DATE: 150-160
 BY: _____

GRAVEL	%
SAND	22 %
SILT	68 %
CLAY	10 %

DESCRIPTION:

COMMENTS

- SIEVE SIZES -



M.I.T. CLASSIFICATION
 -GRAIN SIZE (mm)-

RB 27-1
150-160

SAMPLE NO:

BY:

HYDROMETER ANALYSIS

A.S.T.M. D 422-63.

[illegible]

DESCRIPTION: _____

SPECIFIC GRAVITY ; G_s : ASSUMED = _____ ; CALCULATED = _____

MENISCUS CORRECTION, C_m : _____

DISPERSING AGENT CORRECTION, C_d : _____

DRY WEIGHT OF SOIL, U_3 : _____.

% < NO. 60 SIEVE : _____

$$N_1 = \left(\frac{\% < N^{\circ} 60}{100} \right) N = \text{_____} N \text{ (COMBINED ANALYSIS).}$$
$$N = R \frac{G}{G-1} \times \frac{100}{U_S} = R \underline{\hspace{2cm}}.$$

REMARKS: _____

- SIEVE ANALYSIS -

FILE NO: _____
SAMPLE NO: _____
DATE: _____
BY: _____

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT	
			RETAINED	PASSING
3 IN.				
2 1/2 IN.				
2 IN.				
1 1/2 IN.				
1 IN.				
3/4 IN.				
1/2 IN.				
3/8 IN.				
NO. 4				100.0
NO. 10	2.1	0.2		99.8
NO. 20	5.5	1.0		98.8
NO. 40	11.2	1.2		97.6
NO. 60				
NO. 100	22.4	2.2		95.8
NO. 140				
NO. 200	44.8	4.4		91.2
PAN	44.9	4.4		
TOTAL	50.0	100.0		
REMARKS _____				

GRAIN SIZE CHART

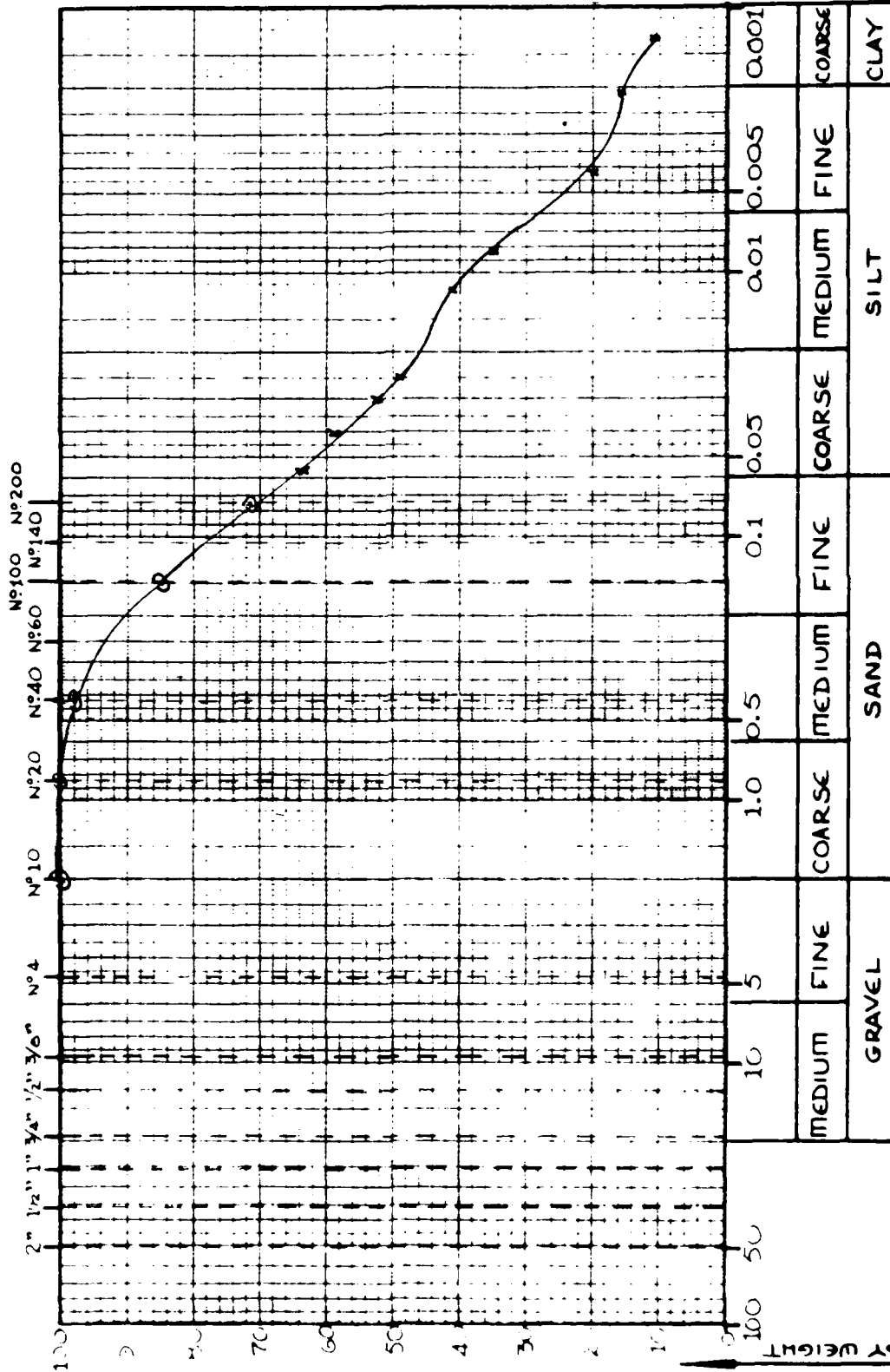
FILE NO: _____
 SAMPLE NO: RB 27-2
 DATE: 180-190
 BY: _____

GRAVEL	%
SAND	47%
SILT	50%
CLAY	16%

DESCRIPTION:

COMMENTS

- SIEVE SIZES -



M.I.T. CLASSIFICATION
 -GRAIN SIZE (mm)-

RB 27-2

180-190

FILE NO: _____

SAMPLE NO: _____

DATE: _____

BY: _____

HYDROMETER ANALYSIS

ASTM. D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R _H	TEMP. °C	R _H = R _H + (C _m C _d)	DIA- METER (mm).	L	K	N (%)	N ₁ (%)
		1/2	30.5		32	0.057	11.1	.0122	64	
		1	28		29.5	0.041	11.5	"	59	
		2	25		26.5	0.030	12.0	"	53	
		3	23	30.5	24.5	0.025	12.4	"	49	
		14	19	-	20.5	0.012	13.0	"	41.0	
		29	16	-	17.5	0.0083	13.5	"	35	
		200	9	29.5	10.1	0.0033	14.7	.0123	20.2	
		515	7.5	28.5	8.1	0.0021	14.9	.0124	16.2	
		1325	5	28	5.4	0.0013	15.3	"	10.8	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____MENISCUS CORRECTION, C_m: _____DISPERSING AGENT CORRECTION, C_d: _____DRY WEIGHT OF SOIL, U_s: _____

% < N°60 SIEVE: _____

$$N_1 = \left(\frac{\% < N°60}{100} \right) N = \text{_____} N \text{ (COMBINED ANALYSIS).}$$

$$N = R \frac{G}{G-1} \times \frac{100}{U_s} = R \text{ _____}$$

REMARKS: _____

RB 27-2

180-190

- SIEVE ANALYSIS -

FILE NO: _____
SAMPLE NO: _____
DATE: _____
BY: _____

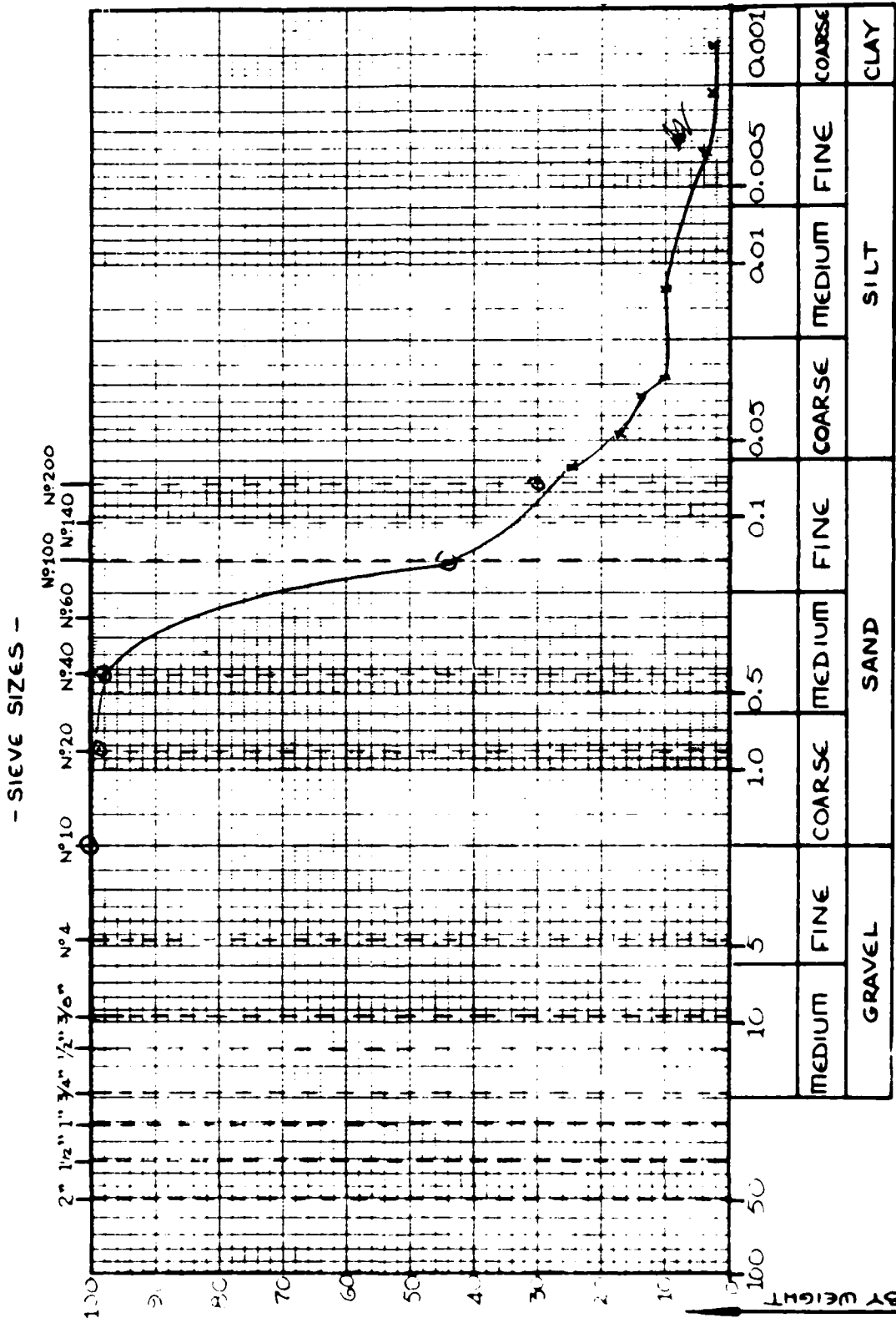
SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT	
			RETAINED	PASSING
3 IN.				
2 1/2 IN.				
2 IN.				
1 1/2 IN.				
1 IN.				
3/4 IN.				
1/2 IN.				
3/8 IN.				
NO. 4				
NO. 10				100
NO. 20	0.2	0.4		99.6
NO. 40	0.6	1.2		98.8
NO. 60				
NO. 100	6.8	3.6		95.2
NO. 140				
NO. 200	6.4	2.8		92.4
PAN	33.2	72.8		
TOTAL	50.0	100		
REMARKS _____				

GRAIN SIZE CHART

FILE NO: _____
 SAMPLE NO: RB 27-3
 DATE: 190-195
 BY: _____

GRAVEL	%
SAND	78 %
SILT	20 %
CLAY	2 %

DESCRIPTION: _____
 COMMENTS: _____



U.T. CLASSIFICATION
 - GRAIN SIZE (mm) -

RB 77-3

190-195

FILE NO: _____

SAMPLE NO: _____

DATE: _____

BY: _____

HYDROMETER ANALYSIS

ASTM. D 422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R _H	TEMP. °C	R _H = R _H + (C _m C _d)	DIA- METER (mm)	L	K	N (%)	N ₁ (%)
		1/2	11		12.5	0.065	14.3	0.022	25.0	
		1	7		8.5	0.047	15.0	"	17.0	
		2	5.5		7.0	0.034	15.2	"	14.0	
		3	3.5	30.5	5.0	0.028	15.5	"	10.0	
		14	3.5	—	5.0	0.013	15.6	"	10.0	
		185	1.0	29.0	1.9	0.0036 0.012	16.0	0.023	3.8	
		500	1.0	28.5	1.6	0.0022	16.0	0.024	3.2	
		1310	1.0	28	1.4	0.0014	16.0	0.024	2.8	

DESCRIPTION: _____

SPECIFIC GRAVITY, G_s : ASSUMED = _____; CALCULATED = _____MENISCUS CORRECTION, C_m : _____DISPERSING AGENT CORRECTION, C_d : _____DRY WEIGHT OF SOIL, U_s : _____

% < N°60 SIEVE: _____

 $N_1 = \left(\frac{\% < N°60}{100} \right) N = \text{_____} N$ (COMBINED ANALYSIS). $N = R \frac{G}{G-1} \times \frac{100}{U_s} = R \text{_____}$

REMARKS: _____

R327-2

90-105

- SIEVE ANALYSIS -

FILE NO: _____
 SAMPLE NO: _____
 DATE: _____
 BY: _____

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT	
			RETAINED	PASSING
3 IN.				
2 1/2 IN.				
2 IN.				
1 1/2 IN.				
1 IN.				
3/4 IN.				
1/2 IN.				
3/8 IN.				
NO. 4				
NO. 10				100 -
NO. 20	0.2	0.6		99.4
NO. 40	0.9	2		98
NO. 60				
NO. 100	21.8	42.5		57.5
NO. 140				
NO. 200	12.2	54.7		45.3
PAN	25.7	100		
TOTAL	50.0	100		
REMARKS _____				

GRAIN SIZE CHART

FILE NO: _____

SAMPLE NO: RB 28-1

DATE: 12-1-75

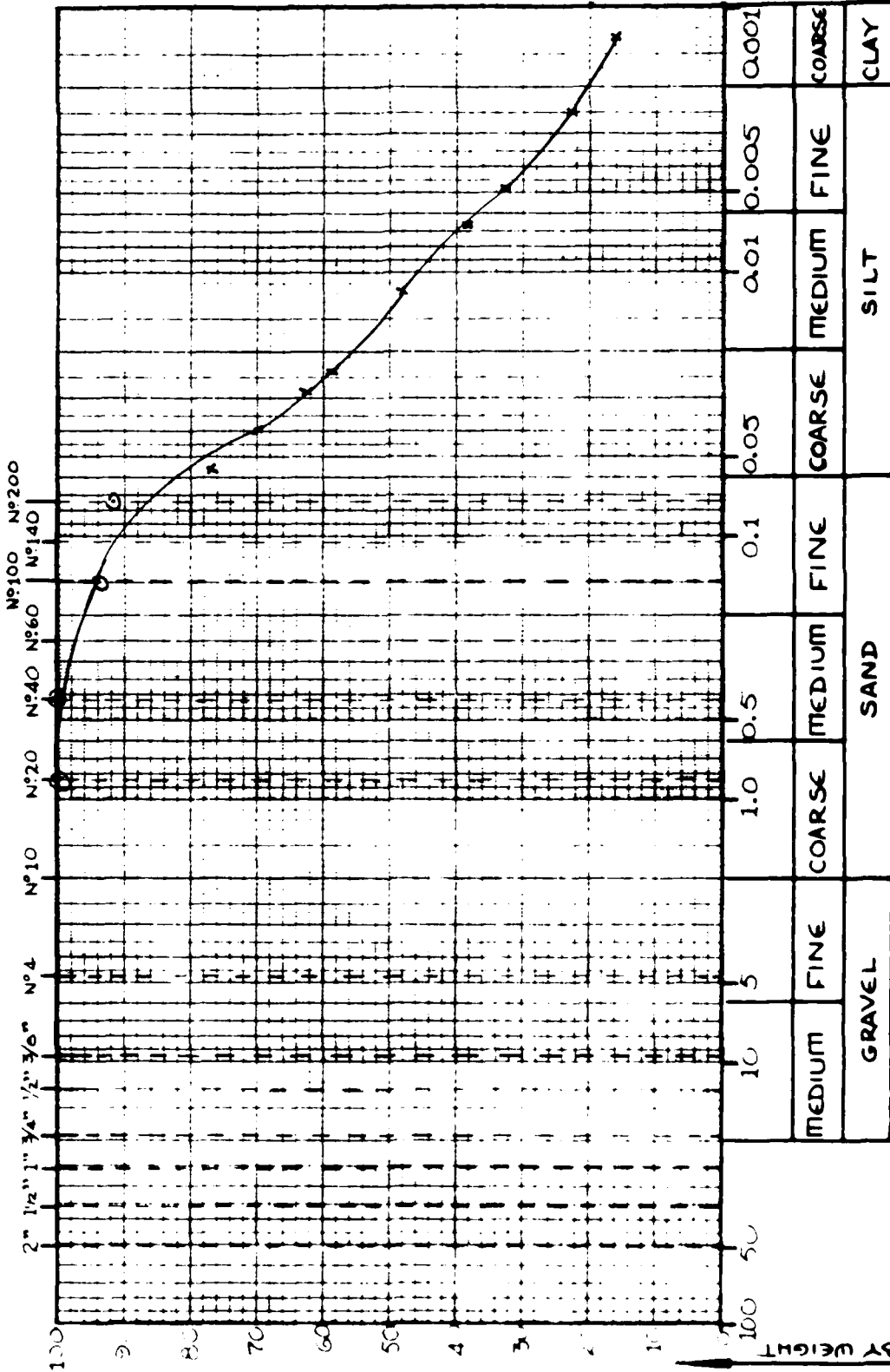
BY: _____

GRAVEL	%
SAND	18
SILT	62
CLAY	20

DESCRIPTION: _____

COMMENTS: _____

- SIEVE SIZES -



U.S.T. CLASSIFICATION
- GRAIN SIZE (mm) -

RB28-1

121-125

FILE NO: _____

SAMPLE NO: _____

DATE: _____

BY: _____

HYDROMETER ANALYSIS

ASTM D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R _H	TEMP. °C	R _H = R _H + (CmCd)	DIA- METER (mm)	L	K	N (%)	N ₁ (%)
		1/2	38		38.3	0.056	9.9	.0125	78.6	
		1	34.5		34.8	0.040	10.4	"	69.6	
		2	31		31.3	0.029	11.1	"	62.6	
		3	29	27.6	29.3	0.024	11.4	"	58.6	
		14	23.5	-	23.8	0.012	12.3	"	47.6	
		46	18.8	-	19.1	0.0066	13.0	"	38.2	
		90	16.2	28	16.6	0.0048	13.5	.0124	33.2	
		360	12	26	11.6	0.0025	14.2	.0127	23.2	
		1315	7.5	28	7.9	0.0013	14.9	.0124	15.8	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____MENISCUS CORRECTION, C_m: _____DISPERSING AGENT CORRECTION, C_d: _____DRY WEIGHT OF SOIL, U_s: _____

% < N°60 SIEVE: _____

$$N_1 = \left(\frac{\% < N°60}{100} \right) N = \text{_____} N \text{ (COMBINED ANALYSIS)}$$

$$N = R \frac{G}{G-1} \times \frac{100}{U_s} = R \text{ _____}$$

REMARKS: _____

278-1

30-125

Whole Sample 800 g

- SIEVE ANALYSIS -

FILE NO: _____
SAMPLE NO: _____
DATE: _____
BY: _____

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT	
			RETAINED	PASSING
3 IN.				
2 1/2 IN.				
2 IN.				
1 1/2 IN.				
1 IN.				
3/4 IN.				
1/2 IN.				
3/8 IN.				
NO. 4				
NO. 10				
NO. 20	— 0 —			100
NO. 40	0.2	0.4		99.6
NO. 60				
NO. 100	2.9	5.8		94.2
NO. 140				
NO. 200	6.0	12.0		88.0
PAN	— 0.9 —	1.8		
TOTAL	50.0	100		
REMARKS _____				

GRAIN SIZE CHART

FILE NO:

SAMPLE NO: RB 28-2

DATE: 180-185

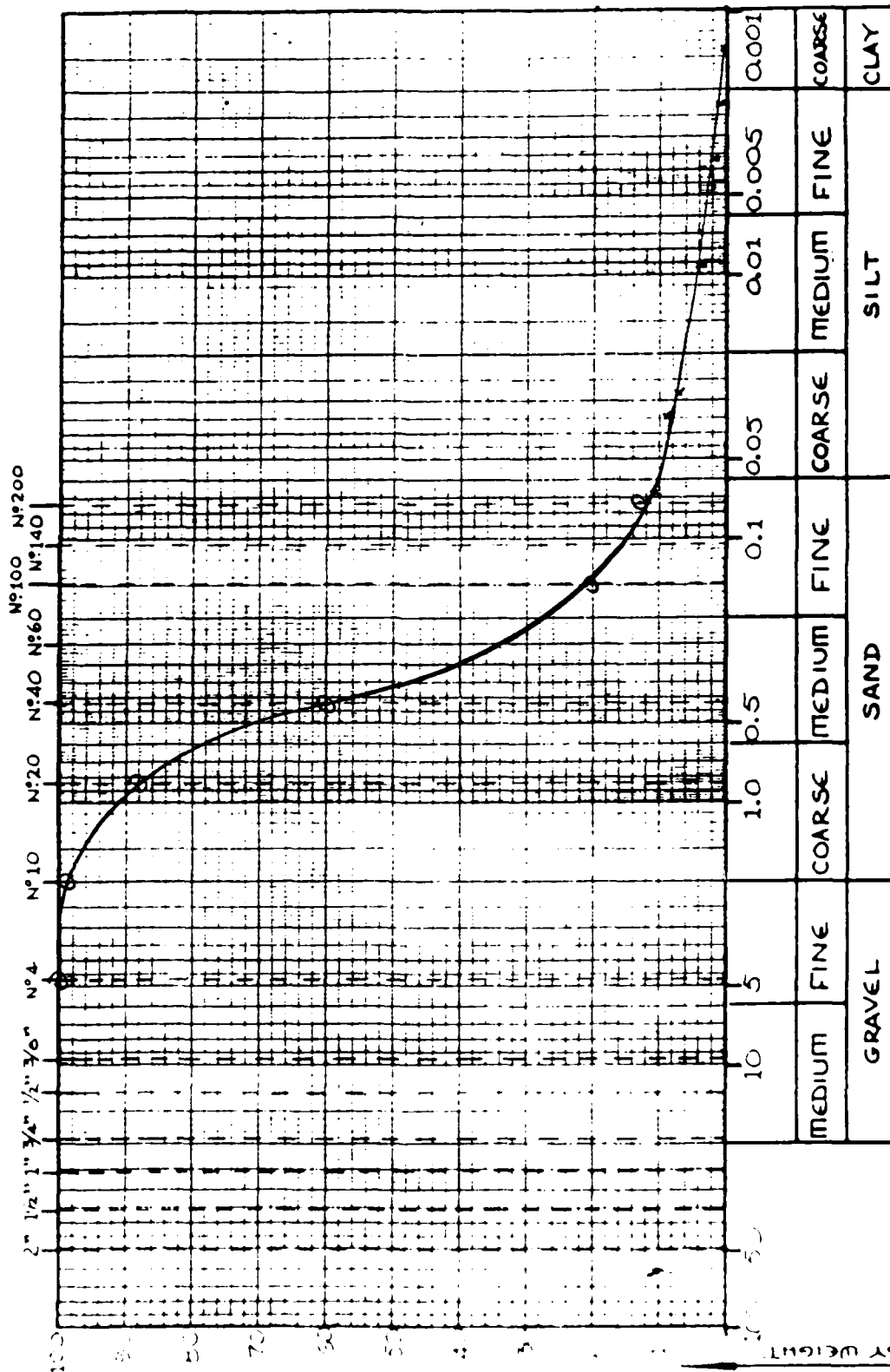
BY:

GRAVEL	1 %
SAND	89 %
SILT	9 %
CLAY	1 %

DESCRIPTION:

COMMENTS

- SIEVE SIZES -



RB 28-2

180-185

HYDROMETER ANALYSIS

FILE NO: _____

SAMPLE NO: _____

DATE: _____

BY: _____

ASTM D 422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R _H	TEMP. °C	R _H = R _H + (CmCd)	DIA- METER (mm)	L	K	N (%)	N ₁ (%)
		1/2	4		5.5	0.088	15.5	0.012	31.0	
		1	-		-	-	-	"	-	
		2	3		4.5	0.034	15.6	"	9.0	
		3	2	30.5	3.5	0.028	15.8	"	17.0	
		28	0.5	-	2.0	0.0092	16.0	"	40.0	
		180	0	29	0.9	0.0037	16.3	0.0123	1.8	
		495	0	28.5	0.6	0.0023	16.3	0.0124	1.2	
		1305	0	28	0.4	0.0016	16.3	"	0.8	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s : ASSUMED = _____; CALCULATED = _____MENISCUS CORRECTION, C_m : _____DISPERSING AGENT CORRECTION, C_d : _____DRY WEIGHT OF SOIL, U_s : _____

% < N°60 SIEVE: _____

 $N_1 = \left(\frac{\% < N°60}{100} \right) N = \text{_____} N$ (COMBINED ANALYSIS). $N = R \frac{G}{G-1} \times \frac{100}{U_s} = R \text{_____}$

REMARKS: _____

R13 28.2

180-185

- SIEVE ANALYSIS -

FILE NO: _____

SAMPLE NO: _____

DATE: _____

BY: _____

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT	
			RETAINED	PASSING
3 IN.				
2 1/2 IN.				
2 IN.				
1 1/2 IN.				
1 IN.				
3/4 IN.				
1/2 IN.				
3/8 IN.				
NO. 4				100.0
NO. 10	0.6	1.2		98.8
NO. 20	5.2	10.4		88.4
NO. 40	22	28.4		60.0
NO. 60				
NO. 100	20.0	40.0		20.0
NO. 140				
NO. 200	3.6	7.2		12.8
PAN	6.4	13.6		0
TOTAL	40.0	100.0		
REMARKS _____				

GRAIN SIZE CHART

FILE NO: _____

SAMPLE NO: RB 29-1

DATE: 135-145

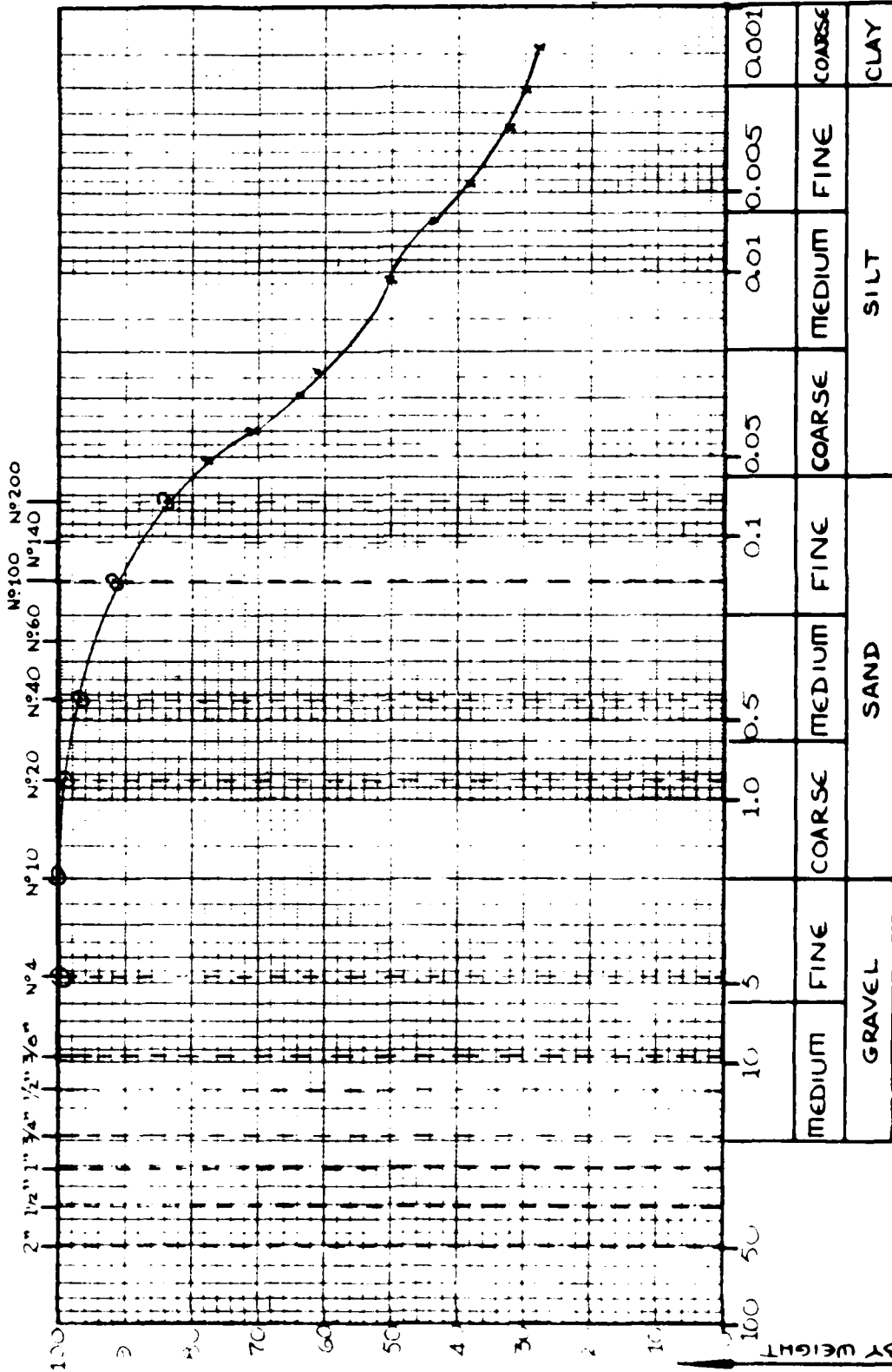
BY: _____

GRAVEL	%
SAND	20 %
SILT	50 %
CLAY	30 %

DESCRIPTION: _____

COMMENTS: _____

- SIEVE SIZES -



RB29-1

135-145

FILE NO: _____

SAMPLE NO: _____

DATE: _____

BY: _____

HYDROMETER ANALYSIS

ASTM. D 422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R _H	TEMP. °C	R _H = R _u + (C _m C _d)	DIA- METER (mm)	L	K	N (%)	N ₁ (%)
		1/2	37		36.8	0.052	10.1	10.12	77.6	
		1	33.5		35.3	0.040	10.6	"	70.6	
		2	30		34.8	0.029	11.2	"	63.6	
		3	28.5	31	30.3	0.024	11.4	"	60.6	
		14	23	—	24.8	0.011	12.4	"	49.6	
		45	20	—	21.8	0.0065	12.9	"	43.6	
		95	18	29	18.9	0.0046	13.2	10.123	37.8	
		255	17	26.5	16.8	0.0029	13.3	10.127	33.6	
		495	16	25	15.1	0.0021	13.5	10.129	30.2	
		1155	14	22	14.0	0.0014	13.8	10.126	28.0	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____MENISCUS CORRECTION, C_m: _____DISPERSING AGENT CORRECTION, C_d: _____DRY WEIGHT OF SOIL, U_s: _____

% < N°60 SIEVE: _____

$$N_1 = \left(\frac{\% < N°60}{100} \right) N = \text{_____} N \text{ (COMBINED ANALYSIS).}$$

$$N = R \frac{G}{G-1} \times \frac{100}{U_s} = R \text{ _____}$$

REMARKS: _____

- SIEVE ANALYSIS -

FILE NO: _____
SAMPLE NO: _____
DATE: _____
BY: _____

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT	
			RETAINED	PASSING
3 IN.				
2 1/2 IN.				
2 IN.				
1 1/2 IN.				
1 IN.				
3/4 IN.				
1/2 IN.				
3/8 IN.				
NO. 4				100
NO. 10	1.1	0.2		99.8
NO. 20	0.5	0.6		99.2
NO. 40	1	2		98
NO. 60				
NO. 100	5.4			92.6
NO. 140				
NO. 200	8.0			84.6
PAN	23.0	43.0		
TOTAL	50.0	100		
REMARKS _____				

GRAIN SIZE CHART

FILE NO: _____

SAMPLE NO: RB 29-2

DATE: 150-160

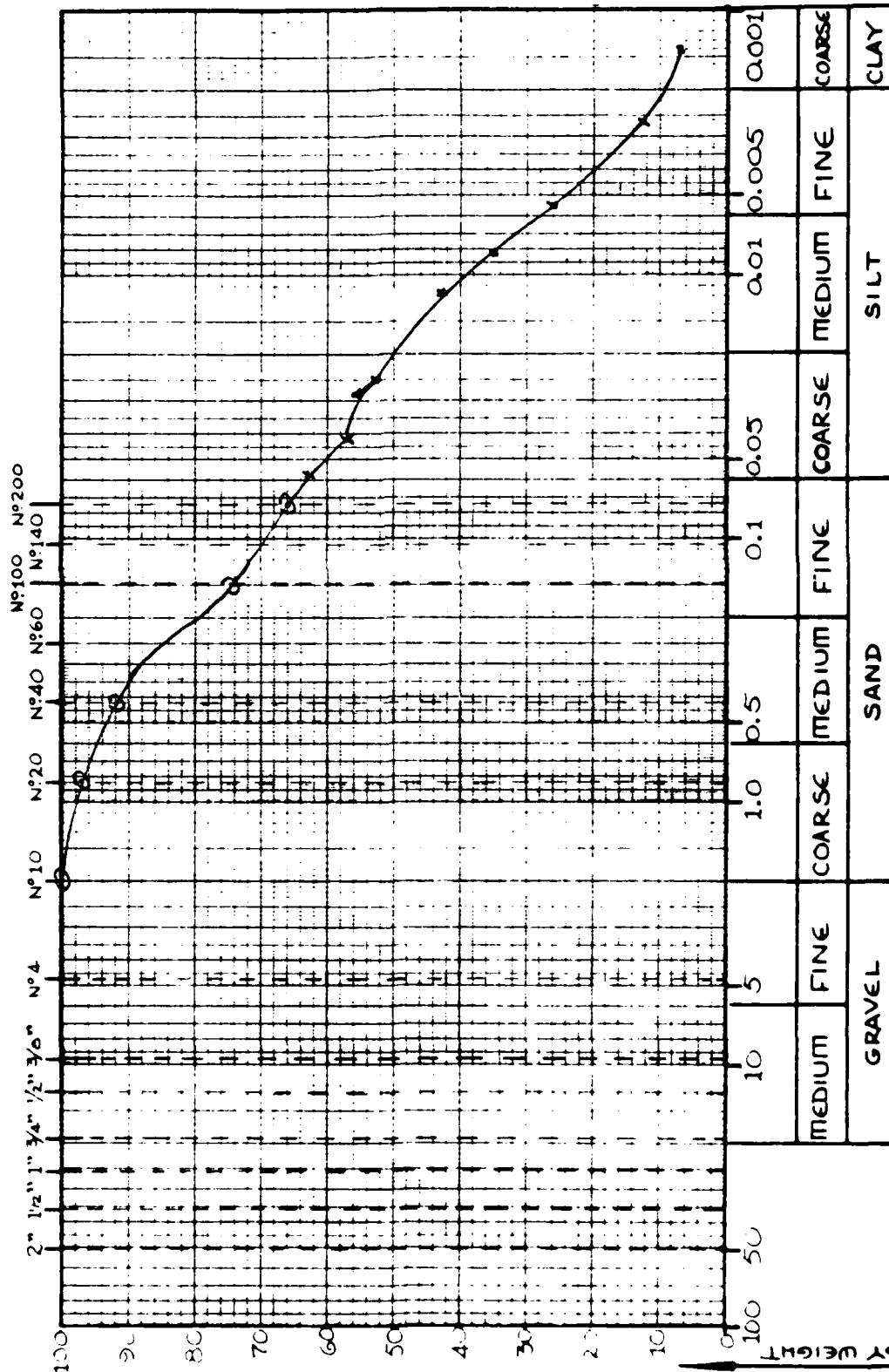
BY: _____

GRAVEL	%
SAND	37 %
SILT	54 %
CLAY	9 %

DESCRIPTION: _____

COMMENTS: _____

- SIEVE SIZES -



U.S.T. CLASSIFICATION
- GRAIN SIZE (mm) -

RB 29-2

150-160

HYDROMETER ANALYSIS

FILE NO: _____

SAMPLE NO: _____

DATE: _____

BY: _____

A.S.T.M. D 422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R _H	TEMP. °C	R _H = R _H + (CmCd)	DIA- METER (mm)	L	K	N (%)	N ₁ (%)
		1/2	31		31.3	0.059	11.1	.0125	62.6	
		1	28		28.3	0.043	11.5	"	56.6	
		2	27.5		27.8	0.030	11.6	"	55.6	
		3	26	27.6	26.3	0.025	11.9	"	52.6	
		14	21	—	21.3	0.012	12.7	"	42.6	
		30	17.5	—	17.8	0.0083	13.2	"	35.6	
		72	12.5	28	12.9	0.0055	14.1	.0124	25.8	
		240	7.0	26	6.6	0.0027	15.0	.0127	13.2	
		1295	3.0	28	3.4	0.0014	15.6	.0124	6.8	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s: ASSUMED = _____; CALCULATED = _____MENISCUS CORRECTION, C_m: _____DISPERSING AGENT CORRECTION, C_d: _____DRY WEIGHT OF SOIL, U_s: _____

% < N°60 SIEVE: _____

$$N_1 = \left(\frac{\% < N°60}{100} \right) N = \text{_____} N \text{ (COMBINED ANALYSIS).}$$

$$N = R \frac{G}{G-1} \times \frac{100}{U_s} = R \text{ _____}$$

REMARKS: _____

RB 21-2
150-10

FILE NO: _____
SAMPLE NO: _____
DATE: _____
BY: _____

- SIEVE ANALYSIS -

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT	
			RETAINED	PASSING
3 IN.				
2 1/2 IN.				
2 IN.				
1 1/2 IN.				
1 IN.				
3/4 IN.				
1/2 IN.				
3/8 IN.				
NO. 4				
NO. 10	0			100
NO. 20	1.5	3.0		98
NO. 40	2.5	5.0		95
NO. 60				
NO. 100	8.5	17.0		83
NO. 140				
NO. 200	4.4	8.8		74.2
PAN	33.1	66.2		
TOTAL	50	100.0		
REMARKS _____				

BY:



RB 29-3

180-185

HYDROMETER ANALYSIS

FILE NO: _____

SAMPLE NO: _____

DATE: _____

BY: _____

ASTM D422-63.

DATE 19__	ACTUAL TIME	ELAPSE TIME (MIN)	R _H	TEMP. °C	R _H = R _H + (C _m C _d)	DIA- METER (mm)	L	K	N (%)	N ₁ (%)
		1/2	17.5		17.5	0.065	13.2	.0126	35.0	
		1	15.5		15.5	0.046	13.6	"	31.0	
		2	14.0		14.0	0.033	13.8	"	28.0	
		3	12.5	27	12.5	0.027	13.9	"	25.0	
		14	10	—	10.0	0.013	14.5	"	20.0	
		34	9	—	9.0	0.0083	14.7	"	18.0	
		80	6	28	6.4	0.0054	15.2	.0124	12.8	
		240	4	26.5	3.8	0.0032	15.5	.0127	7.6	
		480	3.5	25	2.6	0.0023	15.5	.0129	5.2	
		1140	1	27	1	0.0015	16.0	.0126	2	

DESCRIPTION: _____

SPECIFIC GRAVITY; G_s : ASSUMED = _____; CALCULATED = _____MENISCUS CORRECTION, C_m : _____DISPERSING AGENT CORRECTION, C_d : _____DRY WEIGHT OF SOIL, U_s : _____

% < N°60 SIEVE: _____

 $N_1 = \left(\frac{\% < N°60}{100} \right) N = \text{_____} N$ (COMBINED ANALYSIS). $N = R \frac{G}{G-1} \times \frac{100}{U_s} = R \text{_____}$

REMARKS: _____

EB 22-3

30 - 35

FILE NO: _____
 SAMPLE NO: _____
 DATE: _____
 BY: _____

- SIEVE ANALYSIS -

SIEVE SIZE	WEIGHT RETAINED, g.	PERCENT RETAINED	CUMULATIVE PERCENT	
			RETAINED	PASSING
3 IN.				
2 1/2 IN.				
2 IN.				
1 1/2 IN.				
1 IN.				
3/4 IN.				
1/2 IN.				
3/8 IN.				
NO. 4				100.0
NO. 10	1.0	0.4		99.6
NO. 20	1.3	0.5		99.5
NO. 40	5.1	1.9		98.1
NO. 60				
NO. 100	10.3	2.6		97.4
NO. 140				
NO. 200	4.5	0.9		96.5
PAN	24.3	2.9		
TOTAL	50.0	100.0		
REMARKS _____				

APPENDIX 5-E

Results of Laboratory Analyses
of Water Samples

CORPORATION

PAGE 1

RECEIVED: 09/06/84

Analytical Serv

REPORT

LAB # 84-09-033

09/26/84 11:44:34

REPORT Radian

TO B1 4

Austin

or Sacramento

ATTEN Wayne Pearce

CLIENT MCCLELLAN AF

COMPANY McClellan AFB

FACILITY

SAMPLES 3

WORK ID Reconnaissance Boring

TAKEN 9/5/84

TRANS hand carried

TYPE H2O

P.O. # 212-027-16

INVOICE under separate cover

PREPARED Radian Analytical Services

BY 8501 MoPac Blvd.

P.O. Box 9948

Austin, Texas 78766

ATTEN

PHONE (512) 454-4797

CONTACT CONOVER

CERTIFIED BY

please send one copy of the report to Toby Walters in Austin

* Indicates a value less than 5 times the detection limit which must be interpreted accordingly.

@ Indicates that spike recovery for this analysis on the specific matrix was not within acceptable limits indicating an interferent present.

SAMPLE IDENTIFICATION

01 RB-1-1, 120
02 RB-1-2, 140
03 RB-1-3, 160

Analytical Serv TEST CODES and NAMES used on this report

CA E Calcium, ICPES
CL IC Chloride IC
CD3 A Carbonate
FE E Iron, ICPES
GC 601 EPA Method 601/GC
HCO3 A Bicarbonate
MG E Magnesium, ICPES
NA E Sodium, ICPES
SD4 IC Sulfate IC

CORPORATION

PAGE 2

RECEIVED: 09/06/84

Analytical Serv

REPORT

LAB # 84-09-033

RESULTS BY TEST

RB-1-1

RB-1-2

RB-1-3

TEST CODE	Sample 01 (entered units)	Sample 02 (entered units)	Sample 03 (entered units)
CA E	35	26	34
ug/ml			
CL IC	16	23	18
mg/L			
CO3 A	<1	<1	<1
mg/L as CaCO3			
FE E	5.9	44	74
ug/ml			
HCO3 A	76	79	78
mg/L as CaCO3			
MG E	21	23	35
ug/ml			
NA E	30	21	23
ug/ml			
SO4 IC	114	3.5	33
mg/L			

PAGE 3

RECEIVED: 09/06/84

Analytical Serv

REPORT

LAB # 84-09-033

Results by Sample

SAMPLE ID RB-1-1, 120

FRACTION OIC

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 09/05/84

Category

DATA FILE	A	DATE INJECTED	09/24/84	ANALYST	MCL	VERIFIED BY	JSG
CONC. FACTOR				INSTRUMENT	a	COMPOUNDS DETECTED	5
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT		
	Chloromethane	ND	4	Trichloroethene	0.5		
	Bromomethane	ND		Dibromochloromethane	*	ND	
	Vinyl Chloride	ND		1,1,2-Trichloroethane	*	ND	
	Chloroethane	ND		cis-1,3-Dichloropropene	*	ND	
1	Methylene Chloride	80.3		2-Chloroethylvinyl Ether		ND	
2	Trichlorofluoromethane	0.8		Bromoform		ND	
3	1,1-Dichloroethene	2.0	5	1,1,2,2-Tetrachloroethane	#	2.5	
	1,1-Dichloroethane	ND		Tetrachloroethylene	#	ND	
	trans-1,2-Dichloroethene	ND		Chlorobenzene		ND	
	Chloroform	ND		1,3-Dichlorobenzene		ND	
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene		ND	
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene		ND	
	Carbon Tetrachloride	ND					
	Bromodichloromethane	ND					
	1,2-Dichloropropane	ND					
	trans-1,3-Dichloropropene	ND					

CORPORATION

PAGE 4

RECEIVED: 09/06/84

Analytical Serv

REPORT

LAB # 84-09-033

Results by Sample

Continued From Above

SAMPLE ID RB-1-1, 120

FRACTION OIC

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 09/05/84

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/L unless otherwise specified.

ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).

*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.

#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

PAGE 5

Analytical Serv

REPORT

LAB # 84-09-033

RECEIVED: 09/06/84

Results by Sample

SAMPLE ID RB-1-2, 140

FRACTION 02C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 09/05/84

Category

DATA FILE _____ A _____ DATE INJECTED 09/24/84 ANALYST _____ MCL _____ VERIFIED BY JSG
 CONC. FACTOR _____ INSTRUMENT _____ a _____ COMPOUNDS DETECTED _____ Q _____

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Chloromethane	ND	_____	Trichloroethene	ND
_____	Bromomethane	ND	_____	Dibromochloromethane *	ND
_____	Vinyl Chloride	ND	_____	1,1,2-Trichloroethane *	ND
_____	Chloroethane	ND	_____	cis-1,3-Dichloropropene *	ND
_____	Methylene Chloride	ND	_____	2-Chloroethylvinyl Ether	ND
_____	Trichlorofluoromethane	ND	_____	Bromoform	ND
_____	1,1-Dichloroethene	ND	_____	1,1,2,2-Tetrachloroethane #	ND
_____	1,1-Dichloroethane	ND	_____	Tetrachloroethylene #	ND
_____	trans-1,2-Dichloroethene	ND	_____	Chlorobenzene	ND
_____	Chloroform	ND	_____	1,3-Dichlorobenzene	ND
_____	1,2-Dichloroethane	ND	_____	1,2-Dichlorobenzene	ND
_____	1,1,1-Trichloroethane	ND	_____	1,4-Dichlorobenzene	ND
_____	Carbon Tetrachloride	ND			
_____	Bromodichloromethane	ND			
_____	1,2-Dichloropropane	ND			
_____	trans-1,3-Dichloropropene	ND			

CORPORATION

PAGE 6
 RECEIVED: 09/06/84
 SAMPLE ID RB-1-2, 140
 Analytical Serv
 Results by Sample
 REPORT
 LAB # 84-09-033
 Continued From Above
 FRACTION 02C TEST CODE GC 601 NAME EPA Method 601/GC
 Date & Time Collected 09/05/84 Category _____

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.
 All results reported in ug/L unless otherwise specified.
 ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
 *Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
 #1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

PAGE 7

RECEIVED: 09/06/84

Analytical Serv

REPORT

LAB # 84-09-033

Results by Sample

SAMPLE ID RB-1-3, 160

FRACTION 03C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 09/05/84

Category

DATA FILE _____
CONC. FACTOR _____

DATE INJECTED 09/24/84

ANALYST _____
INSTRUMENT _____MCL _____
COMPOUNDS DETECTED 2

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Chloromethane	ND	_____	Trichloroethene	ND
_____	Bromomethane	ND	_____	Dibromochloromethane *	ND
_____	Vinyl Chloride	ND	_____	1,1,2-Trichloroethane *	ND
_____	Chloroethane	ND	_____	cis-1,3-Dichloropropene *	ND
1	Methylene Chloride	1.7	_____	2-Chloroethylvinyl Ether	ND
2	Trichlorofluoromethane	0.9	_____	Bromoform	ND
_____	1,1-Dichloroethene	ND	_____	1,1,2,2-Tetrachloroethane #	ND
_____	1,1-Dichloroethane	ND	_____	Tetrachloroethylene #	ND
_____	trans-1,2-Dichloroethene	ND	_____	Chlorobenzene	ND
_____	Chloroform	ND	_____	1,3-Dichlorobenzene	ND
_____	1,2-Dichloroethane	ND	_____	1,2-Dichlorobenzene	ND
_____	1,1,1-Trichloroethane	ND	_____	1,4-Dichlorobenzene	ND
_____	Carbon Tetrachloride	ND			
_____	Bromodichloromethane	ND			
_____	1,2-Dichloropropane	ND			
_____	trans-1,3-Dichloropropene	ND			

CORPORATION

PAGE 8

RECEIVED: 09/06/84

Analytical Serv

REPORT

Results by Sample

LAB # 84-09-033

Continued From Above

SAMPLE ID RB-1-3, 160

FRACTION 03C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 09/05/84

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/L unless otherwise specified.

ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).

*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.

#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

CORPORATION

PAGE 9

RECEIVED: 09/06/84

Analytical Serv

REPORT

LAB # 84-09-033

NonReported Work

FRACTION AND TEST CODES FOR WORK NOT REPORTED ELSEWHERE

01D : DUP601
02D : DUP601
03D : DUP601

PAGE 1

RECEIVED: 09/07/84

Analytical Serv

REPORT

LAB # 84-09-051

09/26/84 11:31:01

REPORT Radian
TO B1 4

Austin

or Sacramento

ATTEN Wayne Pearce

CLIENT MCCLELLAN AF

COMPANY McClellan AFB

FACILITY

SAMPLES 2

PREPARED Radian Analytical Services

BY 8501 MoPac Blvd.

P.O. Box 9948

Austin, Texas 78766

ATTEN

PHONE (512) 454-4797

CERTIFIED BY

CONTACT CONOVER

please send one copy of the report to Toby Walters in Austin

WORK ID Recon Boring

TAKEN 9/6/84

TRANS hand carried

TYPE H2O

P.O. # 212-027-16

INVOICE under separate cover

* Indicates a value less than 5 times the detection limit
which must be interpreted accordingly.@ Indicates that spike recovery for this analysis on the
specific matrix was not within acceptable limits indicating
an interferent present.

SAMPLE IDENTIFICATION

01 RB-1-4, 180

02 RB-1-5, 200

Analytical Serv TEST CODES and NAMES used on this report

CA E Calcium, ICPEs

CL IC Chloride IC

CO3 A Carbonate

FE E Iron, ICPEs

GC 601 EPA Method 601/GC

HCO3 A Bicarbonate

MG E Magnesium, ICPEs

NA E Sodium, ICPEs

SO4 IC Sulfate IC

CORPORATION

PAGE 2

RECEIVED: 09/07/84

Analytical Serv

REPORT

LAB # 84-09-051

RESULTS BY TEST

RB-1-4 RB-1-5

TEST CODE	Sample 01	Sample 02
default units	(entered units)	(entered units)
CA E	15	14
ug/ml		
CL IC	14	12
mg/L		
CO3 A	<1	<1
mg/L as CaCO3		
FE E	6.1	11
ug/ml		
HCO3 A	93	87
mg/L as CaCO3		
MG E	12	12
ug/ml		
NA E	17	14
ug/ml		
SO4 IC	1	1
mg/L		

PAGE 3

Analytical Serv

REPORT

LAB # 84-09-051

RECEIVED: 09/07/84

Results by Sample

SAMPLE ID RB-1-4, 180

FRACTION Q1C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 09/06/84

Category

DATA FILE	A	DATE INJECTED	09/11/84	ANALYST	KS	VERIFIED BY	JSG
CONC. FACTOR				INSTRUMENT	a	COMPOUNDS DETECTED	0
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT		
	Chloromethane	ND		Trichloroethene	ND		
	Bromomethane	ND		Dibromochloromethane *	ND		
	Vinyl Chloride	ND		1,1,2-Trichloroethane *	ND		
	Chloroethane	ND		cis-1,3-Dichloropropene *	ND		
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND		
	Trichlorofluoromethane	ND		Bromoform	ND		
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane #	ND		
	1,1-Dichloroethane	ND		Tetrachloroethylene #	ND		
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND		
	Chloroform	ND		1,3-Dichlorobenzene	ND		
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND		
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND		
	Carbon Tetrachloride	ND					
	Bromodichloromethane	ND					
	1,2-Dichloropropane	ND					
	trans-1,3-Dichloropropene	ND					

CORPORATION

PAGE 4

RECEIVED: 09/07/84

Analytical Serv

Results by Sample

REPORT

LAB # 84-09-051

Continued From Above

SAMPLE ID RB-1-4, 180

FRACTION O1C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 09/06/84

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/L unless otherwise specified.

ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).

*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

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RECEIVED: 09/07/84

Analytical Serv
Results by Sample

LAB # 84-09-051

SAMPLE ID RB-1-5, 200

FRACTION 02C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 09/06/84

Category

DATA FILE	A	DATE INJECTED	09/11/84	ANALYST	KS	VERIFIED BY	JSG
CONC. FACTOR				INSTRUMENT	a	COMPOUNDS DETECTED	0
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT		
	Chloromethane	ND		Trichloroethene	ND		
	Bromomethane	ND		Dibromochloromethane *	ND		
	Vinyl Chloride	ND		1,1,2-Trichloroethane *	ND		
	Chloroethane	ND		cis-1,3-Dichloropropene *	ND		
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND		
	Trichlorofluoromethane	ND		Bromoform	ND		
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane #	ND		
	1,1-Dichloroethane	ND		Tetrachloroethylene #	ND		
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND		
	Chloroform	ND		1,3-Dichlorobenzene	ND		
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND		
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND		
	Carbon Tetrachloride	ND					
	Bromodichloromethane	ND					
	1,2-Dichloropropane	ND					
	trans-1,3-Dichloropropene	ND					

CORPORATION

PAGE 6

RECEIVED: 09/07/84

Analytical Serv

REPORT

LAB # 84-09-051

Results by Sample

Continued From Above

SAMPLE ID RB-1-5, 200

FRACTION 02C

TEST CODE GC 601 NAME EPA Method 601/GC

Date & Time Collected 09/06/84

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/L unless otherwise specified.

ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).

*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

CORPORATION

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RECEIVED: 09/07/84

Analytical Serv

REPORT

LAB # 84-09-051

NonReported Work

FRACTION AND TEST CODES FOR WORK NOT REPORTED ELSEWHERE

01D : DUP601

02D : DUP601

PAGE 1

RECEIVED: 08/15/84

Analytical Serv

REPORT

LAB # 84-08-159

08/30/84 16:21:48

REPORT Radian

TO BL 4

Austin

or Sacramento

ATTEN Wayne Pearce

CLIENT MCCLELLAN AFB

COMPANY McClellan AFB

FACILITY

SAMPLES 4

WORK ID Recon. Boring

TAKEN 8/14/84

TRANS hand carried

TYPE H2O

P.O. # 212-027-16

INVOICE under separate cover

PREPARED Radian Analytical Services

BY 8501 MoPac Blvd.

P.O. Box 9948

Austin, Texas 78766

ATTEN

PHONE (512) 454-4797

CERTIFIED BY

CONTACT CONOVER

Lois Turner

SAMPLE IDENTIFICATION

01 RB-2-1, 95-100
02 RB-2-2, 135-140
03 RB-2-3, 155-160
04 RB-2-4, 175-180

Analytical Serv TEST CODES and NAMES used on this report

CA E Calcium, ICPEB
CL IC Chloride IC
CO3 A Carbonate
FE E Iron, ICPEB
GC 601 EPA Method 601/GC
HC03 A Bicarbonate
MG E Magnesium, ICPEB
NA E Sodium, ICPEB
SO4 IC Sulfate IC

PAGE 2

RECEIVED: 08/15/84

Analytical Serv

REPORT

Results by Sample

LAB # 84-08-159

SAMPLE ID RB-2-1, 95-100

SAMPLE # 01 FRACTIONS: A, B, C, D

Date & Time Collected 08/14/84

Category

CA E 18 ug/ml CL IC 20 mg/L CO3 A <1 mg/L as CaCO3 FE E 1.2 ug/ml HCO3 A 96 mg E 11 ug/ml

NA E 22 ug/ml S04 IC 7 mg/L

PAGE 3

RECEIVED: 08/15/84

Analytical Serv

REPORT

Results by Sample

LAB # 84-08-159

SAMPLE ID RB-2-1, 95-100

FRACTION O1C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/14/84

Category

DATA FILE B DATE INJECTED 08/23/84 ANALYST MCL VERIFIED BY JSQ
CONC. FACTOR INSTRUMENT B COMPOUNDS DETECTED Q

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
—	Chloromethane	ND	—	Trichloroethene	ND
—	Bromomethane	ND	—	Dibromochloromethane *	ND
—	Vinyl Chloride	ND	—	1,1,2-Trichloroethane *	ND
—	Chloroethane	ND	—	cis-1,3-Dichloropropene *	ND
—	Methylene Chloride	ND	—	2-Chloroethylvinyl Ether	ND
—	Trichlorofluoromethane	ND	—	Bromoform	ND
—	1,1-Dichloroethene	ND	—	1,1,2,2-Tetrachloroethane #	ND
—	1,1-Dichloroethane	ND	—	Tetrachloroethylene #	ND
—	trans-1,2-Dichloroethene	ND	—	Chlorobenzene	ND
—	Chloroform	ND	—	1,3-Dichlorobenzene	ND
—	1,2-Dichloroethane	ND	—	1,2-Dichlorobenzene	ND
—	1,1,1-Trichloroethane	ND	—	1,4-Dichlorobenzene	ND
—	Carbon Tetrachloride	ND			
—	Bromodichloromethane	ND			
—	1,2-Dichloropropane	ND			
—	trans-1,3-Dichloropropene	ND			

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RECEIVED: 08/15/84

Analytical Serv

Results by Sample

REPORT

LAB # 84-08-159

Continued From Above

SAMPLE ID RB-2-1, 95-100

FRACTION Q1C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/14/84

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/L unless otherwise specified.

ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).

*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.

#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

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RECEIVED: 08/15/84

Analytical Serv

REPORT

LAB # 84-08-159

Results by Sample

SAMPLE ID RB-2-2, 135-140		SAMPLE # 02		FRACTIONS: A, B, C, D	
Date & Time Collected 08/14/84		Category			
CA E	21 ug/ml	CL IC	21 mg/L	CO3 A	<1 mg/L as CaCO3
NA E	22 ug/ml	S04 IC	6 mg/L	HCO3 A	6.7 ug/ml
				96 MG E	13 ug/ml

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RECEIVED: 08/15/84

Analytical Serv

Results by Sample

REPORT

LAB # 84-08-159

SAMPLE ID RB-2-2, 135-140

FRACTION 02C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/14/84

Category

DATA FILE B DATE INJECTED 08/23/84 ANALYST MCL VERIFIED BY JSQ
CONC. FACTOR INSTRUMENT B COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
—	Chloromethane	ND	—	Trichloroethene	ND
—	Bromomethane	ND	—	Dibromochloromethane *	ND
—	Vinyl Chloride	ND	—	1,1,2-Trichloroethane *	ND
—	Chloroethane	ND	—	cis-1,3-Dichloropropene *	ND
—	Methylene Chloride	ND	—	2-Chloroethylvinyl Ether	ND
—	Trichlorofluoromethane	ND	—	Bromoform	ND
—	1,1-Dichloroethene	ND	—	1,1,2,2-Tetrachloroethane #	ND
—	1,1-Dichloroethane	ND	—	Tetrachloroethylene #	ND
—	trans-1,2-Dichloroethene	ND	—	Chlorobenzene	ND
—	Chloroform	ND	—	1,3-Dichlorobenzene	ND
—	1,2-Dichloroethane	ND	—	1,2-Dichlorobenzene	ND
—	1,1,1-Trichloroethane	ND	—	1,4-Dichlorobenzene	ND
—	Carbon Tetrachloride	ND			
—	Bromodichloromethane	ND			
—	1,2-Dichloropropane	ND			
—	trans-1,3-Dichloropropene	ND			

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 RECEIVED: 08/15/84
 Analytical Serv Results by Sample
 SAMPLE ID RB-2-2, 135-140
 LAB # 84-08-159
 Continued From Above
 FRACTION Q2C TEST CODE GC 601 NAME EPA Method 601/GC
 Date & Time Collected 08/14/84 Category _____

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
 All results reported in ug/L unless otherwise specified.
 ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
 *Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
 #1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

PAGE 8

RECEIVED: 08/15/84

Analytical Serv

REPORT

Results by Sample

LAB # 84-08-159

SAMPLE ID RB-2-3, 155-160

SAMPLE # 03 FRACTIONS: A,B,C,D

Date & Time Collected 08/14/84

Category

CA E 20 ug/ml CL IC 18 mg/L CO3 A <1 mg/L as CaCO3 FE E 2.7 ug/ml HCO3 A 85 mg/L MG E 9.6 ug/ml

NA E 25 ug/ml SO4 IC 6 mg/L

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RECEIVED: 08/15/84

Analytical Serv

Results by Sample

REPORT

LAB # 84-08-159

SAMPLE ID RB-2-3, 155-160

FRACTION 03C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/14/84

Category

DATA FILE
CONC. FACTOR

B

DATE INJECTED 08/23/84

ANALYST
INSTRUMENT

MCL

B

VERIFIED BY JSG
COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
—	Chloromethane	ND	—	Trichloroethene	ND
—	Bromomethane	ND	—	Dibromochloromethane *	ND
—	Vinyl Chloride	ND	—	1,1,2-Trichloroethane *	ND
—	Chloroethane	ND	—	cis-1,3-Dichloropropene *	ND
—	Methylene Chloride	ND	—	2-Chloroethylvinyl Ether	ND
—	Trichlorofluoromethane	ND	—	Bromoform	ND
—	1,1-Dichloroethene	ND	—	1,1,2,2-Tetrachloroethane #	ND
—	1,1-Dichloroethane	ND	—	Tetrachloroethylene #	ND
—	trans-1,2-Dichloroethene	ND	—	Chlorobenzene	ND
—	Chloroform	ND	—	1,3-Dichlorobenzene	ND
—	1,2-Dichloroethane	ND	—	1,2-Dichlorobenzene	ND
—	1,1,1-Trichloroethane	ND	—	1,4-Dichlorobenzene	ND
—	Carbon Tetrachloride	ND			
—	Bromodichloromethane	ND			
—	1,2-Dichloropropane	ND			
—	trans-1,3-Dichloropropene	ND			

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RECEIVED: 08/15/84

Analytical Serv

Results by Sample

REPORT

LAB # 84-08-159

Continued From Above

SAMPLE ID RB-2-3, 155-160

FRACTION 03C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/14/84

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/L unless otherwise specified.

ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).

*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

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RECEIVED: 08/15/84

Analytical Serv

REPORT

LAB # 84-08-159

Results by Sample

SAMPLE ID RB-2-4, 175-180

SAMPLE # 04 FRACTIONS: A, B, C, D

Date & Time Collected 08/14/84

Category

CA E 15 CL IC 18 CO3 A 18 FE E 0.90 HCO3 A 84 MG E 9.5
ug/ml mg/L mg/L as CaCO3 ug/ml mg/L as CaCO3 ug/ml

NA E 22 SO4 IC 6
ug/ml mg/L

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RECEIVED: 08/15/84

Analytical Serv

REPORT

Results by Sample

LAB # 84-08-159

SAMPLE ID RB-2-4, 175-180

FRACTION 04C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/14/84

Category

DATA FILE _____ B _____ DATE INJECTED 08/23/84 ANALYST _____ MCL _____ VERIFIED BY JSQ
CONC. FACTOR _____ INSTRUMENT _____ B _____ COMPOUNDS DETECTED _____ Q _____

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
—	Chloromethane	ND	—	Trichloroethene	ND
—	Bromomethane	ND	—	Dibromochloromethane *	ND
—	Vinyl Chloride	ND	—	1,1,2-Trichloroethane *	ND
—	Chloroethane	ND	—	cis-1,3-Dichloropropene *	ND
—	Methylene Chloride	ND	—	2-Chloroethylvinyl Ether	ND
—	Trichlorofluoromethane	ND	—	Bromoform	ND
—	1,1-Dichloroethene	ND	—	1,1,2,2-Tetrachloroethane #	ND
—	1,1-Dichloroethane	ND	—	Tetrachloroethylene #	ND
—	trans-1,2-Dichloroethene	ND	—	Chlorobenzene	ND
—	Chloroform	ND	—	1,3-Dichlorobenzene	ND
—	1,2-Dichloroethane	ND	—	1,2-Dichlorobenzene	ND
—	1,1,1-Trichloroethane	ND	—	1,4-Dichlorobenzene	ND
—	Carbon Tetrachloride	ND			
—	Bromodichloromethane	ND			
—	1,2-Dichloropropane	ND			
—	trans-1,3-Dichloropropene	ND			

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CORPORATION

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RECEIVED: 08/15/84

Analytical Serv

Results by Sample

REPORT

LAB # 84-08-159

Continued From Above

SAMPLE ID RB-2-4, 175-180

FRACTION 04C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/14/84

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/L unless otherwise specified.

ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).

*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.

#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

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RECEIVED: 08/15/84

Analytical Serv

REPORT

NonReported Work

LAB # 84-08-159

FRACTION AND TEST CODES FOR WORK NOT REPORTED ELSEWHERE

01D : DUP601
02D : DUP601
03D : DUP601
04D : DUP601

PAGE 1

RECEIVED: 08/21/84

Analytical Serv

REPORT

LAB # 84-08-194

08/30/84 16:34:57

REPORT Radian
TO Bl. 4

Austin

or Sacramento

ATTEN Wayne Pearce

CLIENT MCCLELLAN AF SAMPLES 3

COMPANY McClellan AFB

FACILITY

PREPARED Radian Analytical Services

BY 8501 MoPac Blvd.

P.O. Box 9948

Austin, Texas 78766

ATTEN

PHONE (512) 454-4797

CERTIFIED BY

CONTACT CONOVER

please send one copy of the report to Toby Walters in Austin

WORK ID Recon Boring

TAKEN 8/20/84

TRANS hand

TYPE H2O

P.O. # 212-027-16

INVOICE under separate cover

SAMPLE IDENTIFICATION

01 RB-3-1, 95-100

02 RB-3-2, 155-160

03 RB-3-3, 175-180

Analytical Serv TEST CODES and NAMES used on this report

CA E	Calcium, ICPEs
CL IC	Chloride IC
CO3 A	Carbonate
FE E	Iron, ICPEs
GC 601	EPA Method 601/GC
HCO3 A	Bicarbonate
MG E	Magnesium, ICPEs
NA E	Sodium, ICPEs
SO4 IC	Sulfate IC

PAGE 2

RECEIVED: 08/21/84

Analytical Serv

REPORT

LAB # 84-08-194

Results by Sample

SAMPLE ID RB-3-1, 95-100		SAMPLE # 01		FRACTIONS: A,B,C,D	
Date & Time Collected 08/20/84		Category			
CA E	16 ug/ml	CL IC	18 mg/L	CO3 A	<1 mg/L as CaCO3
NA E	26 ug/ml	S04 IC	15 mg/L	HCO3 A	0.010 ug/ml
				FE E	95 MG E
					12 ug/ml

PAGE 3

Analytical Serv

REPORT

LAB # 84-08-194

RECEIVED: 08/21/84

Results by Sample

SAMPLE ID RB-3-1, 95-100

FRACTION O1C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/20/84

Category

DATA FILE _____
CONC. FACTOR _____

A

DATE INJECTED 08/23/84

ANALYST _____
INSTRUMENT _____

KWK

VERIFIED BY JSG
COMPOUNDS DETECTED 1

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Chloromethane	ND	_____	Trichloroethene	ND
_____	Bromomethane	ND	_____	Dibromochloromethane *	ND
_____	Vinyl Chloride	ND	_____	1,1,2-Trichloroethane *	ND
_____	Chloroethane	ND	_____	cis-1,3-Dichloropropene *	ND
_____	Methylene Chloride	ND	_____	2-Chloroethylvinyl Ether	ND
1	Trichlorofluoromethane	1.1	_____	Bromoform	ND
_____	1,1-Dichloroethene	ND	_____	1,1,2,2-Tetrachloroethane #	ND
_____	1,1-Dichloroethane	ND	_____	Tetrachloroethylene #	ND
_____	trans-1,2-Dichloroethene	ND	_____	Chlorobenzene	ND
_____	Chloroform	ND	_____	1,3-Dichlorobenzene	ND
_____	1,2-Dichloroethane	ND	_____	1,2-Dichlorobenzene	ND
_____	1,1,1-Trichloroethane	ND	_____	1,4-Dichlorobenzene	ND
_____	Carbon Tetrachloride	ND			
_____	Bromodichloromethane	ND			
_____	1,2-Dichloropropane	ND			
_____	trans-1,3-Dichloropropene	ND			

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RECEIVED: 08/21/84

Analytical Serv

Results by Sample

REPORT

LAB # 84-08-194

Continued From Above

SAMPLE ID RB-3-1, 95-100

FRACTION O1C TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/20/84

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/L unless otherwise specified.

ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).

*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.

#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

IRADIAN CONSULTATION

PAGE 5

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Analytical Serv

REPORT

Results by Sample

LAB # 84-08-194

SAMPLE ID RB-3-2, 155-160

SAMPLE # 02 FRACTIONS: A,B,C,D

Date & Time Collected 08/20/84

Category

CA E 14 CL IC 13 CO3 A 104 MG E 10
ug/ml mg/L mg/L as CaCO3 ug/ml

NA E 19 SO4 IC 1.3
ug/ml mg/L

PAGE 6

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Analytical Serv

Results by Sample

REPORT

LAB # 84-08-194

SAMPLE ID RB-3-2, 155-160

FRACTION 02C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/20/84

Category

DATA FILE _____ A _____ DATE INJECTED 08/23/84 ANALYST _____ KWK _____ VERIFIED BY JSQ
CONC. FACTOR _____ INSTRUMENT _____ A _____ COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Chloromethane	ND	_____	Trichloroethene	ND
_____	Bromomethane	ND	_____	Dibromochloromethane *	ND
_____	Vinyl Chloride	ND	_____	1,1,2-Trichloroethane *	ND
_____	Chloroethane	ND	_____	cis-1,3-Dichloropropene *	ND
_____	Methylene Chloride	ND	_____	2-Chloroethylvinyl Ether	ND
_____	Trichlorofluoromethane	ND	_____	Bromoform	ND
_____	1,1-Dichloroethene	ND	_____	1,1,2,2-Tetrachloroethane #	ND
_____	1,1-Dichloroethane	ND	_____	Tetrachloroethylene #	ND
_____	trans-1,2-Dichloroethene	ND	_____	Chlorobenzene	ND
_____	Chloroform	ND	_____	1,3-Dichlorobenzene	ND
_____	1,2-Dichloroethane	ND	_____	1,2-Dichlorobenzene	ND
_____	1,1,1-Trichloroethane	ND	_____	1,4-Dichlorobenzene	ND
_____	Carbon Tetrachloride	ND			
_____	Bromodichloromethane	ND			
_____	1,2-Dichloropropane	ND			
_____	trans-1,3-Dichloropropene	ND			

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RECEIVED: 08/21/84
SAMPLE ID RB-3-2, 155-160

Analytical Serv
Results by Sample

REPORT
Continued From Above

LAB # 84-08-194

FRACTION 02C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/20/84 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

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Analytical Serv

REPORT

LAB # 84-08-194

Results by Sample

SAMPLE ID RB-3-3, 175-180		SAMPLE # 03		FRACTIONS: A, B, C, D	
Date & Time Collected 08/20/84		Category			
CA E	26 ug/ml	CL IC	13 mg/L	CO3 A	<1 mg/L as CaCO3
NA E	24 ug/ml	SO4 IC	1.6 mg/L	FE E	73 ug/ml
				HCO3 A	84 mg E
					26 ug/ml

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Analytical Serv

Results by Sample

REPORT

LAB # 84-08-194

SAMPLE ID RB-3-3, 175-180

FRACTION Q3C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/20/84

Category

DATA FILE _____ A DATE INJECTED 08/23/84 ANALYST _____ KWK VERIFIED BY JSG
CONC. FACTOR _____ A COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Chloromethane	ND	_____	Trichloroethene	ND
_____	Bromomethane	ND	_____	Dibromochloromethane *	ND
_____	Vinyl Chloride	ND	_____	1,1,2-Trichloroethane *	ND
_____	Chloroethane	ND	_____	cis-1,3-Dichloropropene *	ND
_____	Methylene Chloride	ND	_____	2-Chloroethylvinyl Ether	ND
_____	Trichlorofluoromethane	ND	_____	Bromoform	ND
_____	1,1-Dichloroethene	ND	_____	1,1,2,2-Tetrachloroethane #	ND
_____	1,1-Dichloroethane	ND	_____	Tetrachloroethylene #	ND
_____	trans-1,2-Dichloroethene	ND	_____	Chlorobenzene	ND
_____	Chloroform	ND	_____	1,3-Dichlorobenzene	ND
_____	1,2-Dichloroethane	ND	_____	1,2-Dichlorobenzene	ND
_____	1,1,1-Trichloroethane	ND	_____	1,4-Dichlorobenzene	ND
_____	Carbon Tetrachloride	ND			
_____	Bromodichloromethane	ND			
_____	1,2-Dichloropropane	ND			
_____	trans-1,3-Dichloropropene	ND			

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Analytical Serv

Results by Sample

REPORT

LAB # 84-08-194

Continued From Above

SAMPLE ID RB-3-3, 175-180

FRACTION 03C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/20/84

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/L unless otherwise specified.

ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).

*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.

#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

FRADIAN
COMPUTATIONS

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Analytical Serv

REPORT

NonReported Work

LAB # 84-08-194

FRACTION AND TEST CODES FOR WORK NOT REPORTED ELSEWHERE

01D : DUP601
02D : DUP601
03D : DUP601

PAGE 1

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Analytical Serv

REPORT

LAB # 84-08-134

09/05/84 09:51:14

REPORT Radian

TO Bl 4

Austin

or Sacramento

ATTEN Wayne Pearce

CLIENT MCCLELLAN AF

COMPANY McClellan AFB

FACILITY

SAMPLES 4

WORK ID Recon. Boring

TAKEN 8/13/84

TRANS hand carried

TYPE H2O

P O. # 212-027-16

INVOICE under separate cover

PREPARED Radian Analytical Services

BY 8501 MoPac Blvd.

P.O. Box 9948

Austin, Texas 78766

ATTEN

PHONE (512) 454-4797

CONTACT CONOVER

CERTIFIED BY

please send one copy of the report to Toby Walters in Austin
Note: second column confirmation performed on split 4C.

SAMPLE IDENTIFICATION

01 RB-4-1, 105-110
02 RB-4-2, 135-140
03 RB-4-3, 155-160
04 RB-4-4, 195-200

Analytical Serv TEST CODES and NAMES used on this report

CA E Calcium, ICPEs
CL IC Chloride IC
CO3 A Carbonate
FE E Iron, ICPEs
GC 601 EPA Method 601/GC
HCO3 A Bicarbonate
MG E Magnesium, ICPEs
NA E Sodium, ICPEs
SD4 IC Sulfate IC

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Analytical Serv

REPORT

LAB # 84-08-134

Results by Sample

SAMPLE ID RB-4-1, 105-110

SAMPLE # 01 FRACTIONS: A,B,C,D

Date & Time Collected 08/13/84

Category

CA E 27 CL IC 29 CO3 A 29 FE E 2.0 HCO3 A 143 MG E 21
ug/ml mg/L mg/L as CaCO3 ug/ml mg/L as CaCO3 ug/ml

NA E 28 SO4 IC 9
ug/ml mg/L

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Analytical Serv

Results by Sample

REPORT

LAB # 84-08-134

SAMPLE ID RB-4-1, 105-110

FRACTION OIC

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/13/84

Category

DATA FILE	A	DATE INJECTED	08/27/84	ANALYST	MCL	VERIFIED BY	JSG
CONC. FACTOR				INSTRUMENT	a	COMPOUNDS DETECTED	4
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT		
	Chloromethane	ND			Trichloroethene	ND	
	Bromomethane	ND	4		Dibromochloromethane *	0.1	
	Vinyl Chloride	ND			1,1,2-Trichloroethane *	ND	
	Chloroethane	ND			cis-1,3-Dichloropropene *	ND	
	Methylene Chloride	ND			2-Chloroethylvinyl Ether	ND	
	Trichlorofluoromethane	ND			Bromoform	ND	
1	1,1-Dichloroethene	0.1			1,1,2,2-Tetrachloroethane #	ND	
2	1,1-Dichloroethane	0.6			Tetrachloroethylene #	ND	
	trans-1,2-Dichloroethene	ND			Chlorobenzene	ND	
	Chloroform	ND			1,3-Dichlorobenzene	ND	
	1,2-Dichloroethane	ND			1,2-Dichlorobenzene	ND	
3	1,1,1-Trichloroethane	0.6			1,4-Dichlorobenzene	ND	
	Carbon Tetrachloride	ND					
	Bromodichloromethane	ND					
	1,2-Dichloropropane	ND					
	trans-1,3-Dichloropropene	ND					

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Analytical Serv

REPORT

Results by Sample

LAB # 84-08-134

Continued From Above

SAMPLE ID RB-4-1, 105-110

FRACTION O1C TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/13/84

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/L unless otherwise specified.

ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).

*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.

#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

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Analytical Serv

REPORT

LAB # 84-08-134

Results by Sample

SAMPLE ID RB-4-2, 135-140

SAMPLE # 02 FRACTIONS: A, B, C, D

Date & Time Collected 08/13/84

Category

CA E 18 CL IC 21 CO3 A <1 FE E 0.13 HCO3 A 92 MG E 13
ug/ml mg/L mg/L as CaCO3 ug/ml mg/L as CaCO3 ug/ml

NA E 26 SO4 IC 7.9
ug/ml mg/L

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RECEIVED: 08/14/84

Analytical Serv

REPORT

Results by Sample

LAB # 84-08-134

SAMPLE ID RB-4-2, 135-140

FRACTION 02C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/13/84

Category

DATA FILE _____ A _____ DATE INJECTED 08/27/84 ANALYST _____ MCL _____ VERIFIED BY JSG
CONC FACTOR _____ INSTRUMENT _____ a _____ COMPOUNDS DETECTED 1

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Chloromethane	ND	_____	Trichloroethene	ND
_____	Bromomethane	ND	_____	Dibromochloromethane *	ND
_____	Vinyl Chloride	ND	_____	1,1,2-Trichloroethane *	ND
_____	Chloroethane	ND	_____	cis-1,3-Dichloropropene *	ND
_____	Methylene Chloride	ND	_____	2-Chloroethylvinyl Ether	ND
1	Trichlorofluoromethane	0.3	_____	Bromoform	ND
_____	1,1-Dichloroethene	ND	_____	1,1,2,2-Tetrachloroethane #	ND
_____	1,1-Dichloroethane	ND	_____	Tetrachloroethylene #	ND
_____	trans-1,2-Dichloroethene	ND	_____	Chlorobenzene	ND
_____	Chloroform	ND	_____	1,3-Dichlorobenzene	ND
_____	1,2-Dichloroethane	ND	_____	1,2-Dichlorobenzene	ND
_____	1,1,1-Trichloroethane	ND	_____	1,4-Dichlorobenzene	ND
_____	Carbon Tetrachloride	ND			
_____	Bromodichloromethane	ND			
_____	1,2-Dichloropropane	ND			
_____	trans-1,3-Dichloropropene	ND			

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RECEIVED: 08/14/84

Analytical Serv

Results by Sample

REPORT

LAB # 84-08-134

Continued From Above

SAMPLE ID RB-4-2, 135-140

FRACTION 02C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/13/84

Category

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.

All results reported in ug/L unless otherwise specified.

ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).

*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.

#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

ALABAMA
CORPORATION

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RECEIVED: 08/14/84
Analytical Serv
Results by Sample
REPORT
LAB # 84-08-134

SAMPLE ID RB-4-3, 155-160		SAMPLE # 03 FRACTIONS: A, B, C, D	
Date & Time Collected 08/13/84		Category	
CA E	20 CL IC ug/ml	21 CO3 A mg/L	<1 FE E mg/L as CaCO3
NA E	23 SO4 IC ug/ml	5.6 HCO3 A ug/ml	95 MG E mg/L as CaCO3
		7.7 mg/L	14 ug/ml

AD-A156 283

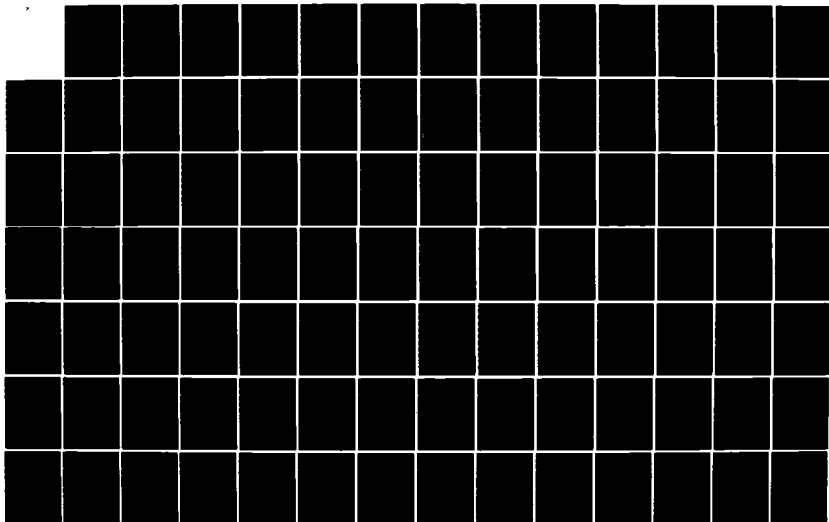
INSTALLATION RESTORATION PROGRAM PHASE II (STAGE 2-1)
VOLUME 2(U) RADIAN CORP AUSTIN TX R W BAUER MAY 85
F33615-83-D-4001

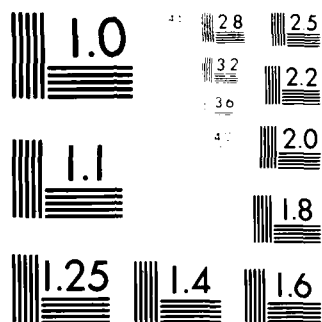
07/10

UNCLASSIFIED

F/G 13/2

NL





MICROCOPY RESOLUTION TEST CHART
 NATIONAL BUREAU OF STANDARDS-1963-A

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Analytical Serv

Results by Sample

REPORT

LAB # 84-08-134

SAMPLE ID RB-4-3, 155-160

FRACTION 03C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/13/84

Category

DATA FILE _____ CONC. FACTOR _____	A _____	DATE INJECTED 08/27/84	ANALYST _____ INSTRUMENT _____	MCL _____ a	VERIFIED BY JSG COMPOUNDS DETECTED 0
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Chloromethane	ND	_____	Trichloroethene	ND
_____	Bromomethane	ND	_____	Dibromochloromethane *	ND
_____	Vinyl Chloride	ND	_____	1,1,2-Trichloroethane *	ND
_____	Chloroethane	ND	_____	cis-1,3-Dichloropropene *	ND
_____	Methylene Chloride	ND	_____	2-Chloroethylvinyl Ether	ND
_____	Trichlorofluoromethane	ND	_____	Bromoform	ND
_____	1,1-Dichloroethene	ND	_____	1,1,2,2-Tetrachloroethane #	ND
_____	1,1-Dichloroethane	ND	_____	Tetrachloroethylene #	ND
_____	trans-1,2-Dichloroethene	ND	_____	Chlorobenzene	ND
_____	Chloroform	ND	_____	1,3-Dichlorobenzene	ND
_____	1,2-Dichloroethane	ND	_____	1,2-Dichlorobenzene	ND
_____	1,1,1-Trichloroethane	ND	_____	1,4-Dichlorobenzene	ND
_____	Carbon Tetrachloride	ND			
_____	Bromodichloromethane	ND			
_____	1,2-Dichloropropane	ND			
_____	trans-1,3-Dichloropropene	ND			

LABORATORY
CORPORATION

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Analytical Serv

Results by Sample

REPORT

LAB # 84-08-134
Continued From Above

SAMPLE ID RB-4-3, 155-160

FRACTION 03C TEST CODE GC 601 NAME EPA Method 601/GC

Date & Time Collected 08/13/84

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/L unless otherwise specified.

ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).

*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.

#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

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Analytical Serv

REPORT

LAB # 84-08-134

Results by Sample

SAMPLE ID RB-4-4, 195-200		SAMPLE # 04		FRACTIONS: A,B,C,D	
Date & Time Collected 08/13/84		Category			
CA E	24 ug/ml	CL IC	24 mg/L	CO3 A	34 mg/L as CaCO3
NA E	26 ug/ml	S04 IC	11 mg/L	FE E	4.0 ug/ml
				HCO3 A	89 mg/L as CaCO3
					15 ug/ml

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Analytical Serv

Results by Sample

REPORT

LAB # 84-08-134

SAMPLE ID RB-4-4, 195-200

FRACTION 04C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/13/84

Category

DATA FILE _____ A _____

DATE INJECTED 08/27/84

ANALYST _____
INSTRUMENT _____

VERIFIED BY JSG
COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Chloromethane	ND	_____	Trichloroethene	ND
_____	Bromomethane	ND	_____	Dibromochloromethane *	ND
_____	Vinyl Chloride	ND	_____	1,1,2-Trichloroethane *	ND
_____	Chloroethane	ND	_____	cis-1,3-Dichloropropene *	ND
_____	Methylene Chloride	ND	_____	2-Chloroethylvinyl Ether	ND
_____	Trichlorofluoromethane	ND	_____	Bromoform	ND
_____	1,1-Dichloroethene	ND	_____	1,1,2,2-Tetrachloroethane #	ND
_____	1,1-Dichloroethane	ND	_____	Tetrachloroethylene #	ND
_____	trans-1,2-Dichloroethene	ND	_____	Chlorobenzene	ND
_____	Chloroform	ND	_____	1,3-Dichlorobenzene	ND
_____	1,2-Dichloroethane	ND	_____	1,2-Dichlorobenzene	ND
_____	1,1,1-Trichloroethane	ND	_____	1,4-Dichlorobenzene	ND
_____	Carbon Tetrachloride	ND			
_____	Bromodichloromethane	ND			
_____	1,2-Dichloropropane	ND			
_____	trans-1,3-Dichloropropene	ND			

LEADIAN
CORPORATION

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Analytical Serv

REPORT

Results by Sample

LAB # 84-08-134

Continued From Above

SAMPLE ID RB-4-4, 195-200

FRACTION 04C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/13/84

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/L unless otherwise specified.

ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).

*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.

#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

LABDIAN
COMPANION

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Analytical Serv

NonReported Work

REPORT

LAB # 84-08-134

FRACTION AND TEST CODES FOR WORK NOT REPORTED ELSEWHERE

01D : DUP601
02D : DUP601
03D : DUP601
04D : DUP601

RADIAN CORPORATION

PAGE 1

RECEIVED: 08/13/84

Analytical Serv

REPORT

10/22/84 13:56:11

LAB # 84-08-129

REPORT Radian

TO BL 4

Austin

or Sacramento

ATTN Wayne Pearce

CLIENT MCCLELLAN AF

COMPANY McClellan AFB

FACILITY

SAMPLES 5

WORK ID Recon. Boring

TAKEN 8/10/84

TRANS hand carried

TYPE H2O

P.O. # 212-027-16

INV. # 4101

PREPARED Radian Analytical Services

BY 8501 MoPac Blvd.

P.O. Box 9948

Austin, Texas 78766

ATTN

PHONE (512) 454-4797

CONTACT CONOVER

CERTIFIED BY

2nd column confirmation performed on 01,02,03. Corrected values for 1,2-dichlorobenzene (01,02) & vinyl chloride (02) reported here as result of reexamination of data. 1,2- & 1,4-dichlorobenzene coeluted here, reported as 1,2-dichlorobenzene.

Duplicate of report of 10/19/84.

* Indicates a value less than 5 times the detection limit which must be interpreted accordingly.

@ Indicates that spike recovery for this analysis on the specific matrix was not within acceptable limits indicating an interferent present.

SAMPLE IDENTIFICATION

01 RB-5-1, 95-100
02 RB-5-2, 115-120
03 RB-5-3, 135-140
04 RB-5-4, 175-180
05 RB-5-5, 195-200

Analytical Serv TEST CODES and NAMES used on this report

CA E Calcium, ICPEs
CL IC Chloride IC
CO3 A Carbonate
FE E Iron, ICPEs
GC 601 EPA Method 601/GC
HCO3 A Bicarbonate
MG E Magnesium, ICPEs
NA E Sodium, ICPEs
SO4 IC Sulfate IC

PAGE 2

RECEIVED: 08/13/84

Analytical Serv

REPORT

LAB # 84-08-129

RESULTS BY TEST

RB-5-1

RB-5-2

RB-5-3

RB-5-4

RB-5-5

TEST CODE	Sample 01	Sample 02	Sample 03	Sample 04	Sample 05
default units	(entered units)	(entered units)	(entered units)	(entered units)	(entered units)
CA E	110	330	36	22	25
ug/ml					
CL IC	57	140	35	18	19
mg/L					
CO3 A	<1	<1	<1	<1	29
mg/L as CaCO3					
FE E	0.94	2.5	5.2	1.7	3.7
ug/ml					
HCO3 A	240	1045	191	92	110
mg/L as CaCO3					
MG E	78	190	30	12	15
ug/ml					
NA E	43	61	26	20	22
ug/ml					
SO4 IC	4.1	290	6.7	7.5	18
mg/L					

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RECEIVED: 08/13/84

Analytical Serv

Results by Sample

REPORT

LAB # 84-08-129

SAMPLE ID RB-5-1, 95-100

FRACTION Q1C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/10/84

Category

DATA FILE B
CONC. FACTOR

DATE INJECTED 08/21/84

ANALYST
INSTRUMENT b

VERIFIED BY JSG
COMPOUNDS DETECTED 10

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
<u> </u>	Chloromethane	<u>ND</u>	<u>6</u>	Trichloroethene	<u>2.3</u>
<u> </u>	Bromomethane	<u>ND</u>	<u>7</u>	Dibromochloromethane *	<u>23.2</u>
<u>1</u>	Vinyl Chloride	<u>747</u>	<u> </u>	1,1,2-Trichloroethane *	<u>ND</u>
<u> </u>	Chloroethane	<u>ND</u>	<u> </u>	cis-1,3-Dichloropropene *	<u>ND</u>
<u> </u>	Methylene Chloride	<u>ND</u>	<u> </u>	2-Chloroethylvinyl Ether	<u>ND</u>
<u> </u>	Trichlorofluoromethane	<u>ND</u>	<u> </u>	Bromoform	<u>ND</u>
<u>2</u>	1,1-Dichloroethene	<u>517</u>	<u>8</u>	1,1,2,2-Tetrachloroethane #	<u>1.8</u>
<u>3</u>	1,1-Dichloroethane	<u>586</u>	<u> </u>	Tetrachloroethylene #	<u>ND</u>
<u> </u>	trans-1,2-Dichloroethene	<u>ND</u>	<u>9</u>	Chlorobenzene	<u>3.9</u>
<u> </u>	Chloroform	<u>ND</u>	<u> </u>	1,3-Dichlorobenzene	<u>ND</u>
<u>4</u>	1,2-Dichloroethane	<u>15.9</u>	<u>10</u>	1,2-Dichlorobenzene	<u>6.6</u>
<u>5</u>	1,1,1-Trichloroethane	<u>16.3</u>	<u> </u>	1,4-Dichlorobenzene	<u>ND</u>
<u> </u>	Carbon Tetrachloride	<u>ND</u>			
<u> </u>	Bromodichloromethane	<u>ND</u>			
<u> </u>	1,2-Dichloropropane	<u>ND</u>			
<u> </u>	trans-1,3-Dichloropropene	<u>ND</u>			

RADIAN
CORPORATION

PAGE 4

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Analytical Serv

Results by Sample

REPORT

LAB # 84-08-129

Continued From Above

SAMPLE ID RB-5-1, 95-100

FRACTION Q1C TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/10/84

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/L unless otherwise specified.

ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).

*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

PAGE 5

RECEIVED: 08/13/84

Analytical Serv

Results by Sample

REPORT

LAB # 84-08-129

SAMPLE ID RB-5-2, 115-120

FRACTION 02C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/10/84

Category

DATA FILE _____ B _____ DATE INJECTED 08/21/84 ANALYST _____ RQS _____ VERIFIED BY JSG
CONC. FACTOR _____ INSTRUMENT _____ b _____ COMPOUNDS DETECTED 9

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
—	Chloromethane	ND	6	Trichloroethene	1.7
—	Bromomethane	ND	—	Dibromochloromethane *	ND
1	Vinyl Chloride	686	—	1,1,2-Trichloroethane *	ND
—	Chloroethane	ND	—	cis-1,3-Dichloropropene *	ND
—	Methylene Chloride	ND	—	2-Chloroethylvinyl Ether	ND
—	Trichlorofluoromethane	ND	—	Bromoform	ND
2	1,1-Dichloroethene	268	7	1,1,2,2-Tetrachloroethane #	1.7
3	1,1-Dichloroethane	330	—	Tetrachloroethylene #	ND
—	trans-1,2-Dichloroethene	ND	—	Chlorobenzene	ND
—	Chloroform	ND	—	1,3-Dichlorobenzene	ND
4	1,2-Dichloroethane	48.2	8	1,2-Dichlorobenzene	20.0
5	1,1,1-Trichloroethane	25.4	—	1,4-Dichlorobenzene	ND
—	Carbon Tetrachloride	ND			
—	Bromodichloromethane	ND			
—	1,2-Dichloropropane	ND			
—	trans-1,3-Dichloropropene	ND			

RADIAN
CORPORATION

PAGE 6

RECEIVED: 08/13/84

Analytical Serv

REPORT

Results by Sample

LAB # 84-08-129

Continued From Above

SAMPLE ID RB-5-2, 115-120

FRACTION 02C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/10/84

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/L unless otherwise specified.

ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).

*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.

#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

RADIAN

COMPUTATION

PAGE 7

RECEIVED: 08/13/84

Analytical Serv

Results by Sample

REPORT

LAB # 84-08-129

SAMPLE ID RB-5-3, 135-140

FRACTION Q3C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/10/84

Category

DATA FILE
CONC. FACTOR

B

DATE INJECTED 08/21/84

ANALYST
INSTRUMENT

RGS

VERIFIED BY JSQ
COMPOUNDS DETECTED 4

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
—	Chloromethane	ND	5	Trichloroethene	2.2
—	Bromomethane	ND	—	Dibromochloromethane	*
—	Vinyl Chloride	ND	—	1,1,2-Trichloroethane	*
—	Chloroethane	ND	—	cis-1,3-Dichloropropene	*
—	Methylene Chloride	ND	—	2-Chloroethylvinyl Ether	ND
—	Trichlorofluoromethane	ND	—	Bromoform	ND
1	1,1-Dichloroethene	77.6	—	1,1,2,2-Tetrachloroethane	*
2	1,1-Dichloroethane	57.0	—	Tetrachloroethylene	*
—	trans-1,2-Dichloroethene	ND	—	Chlorobenzene	ND
—	Chloroform	ND	—	1,3-Dichlorobenzene	ND
3	1,2-Dichloroethane	4.1	—	1,2-Dichlorobenzene	ND
—	1,1,1-Trichloroethane	ND	—	1,4-Dichlorobenzene	ND
—	Carbon Tetrachloride	ND			
—	Bromodichloromethane	ND			
—	1,2-Dichloropropane	ND			
—	trans-1,3-Dichloropropene	ND			

KRADIAN
CORPORATION

PAGE 8

RECEIVED: 08/13/84

Analytical Serv

Results by Sample

REPORT

LAB # 84-08-129

Continued From Above

SAMPLE ID RB-5-3, 135-140

FRACTION Q3C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/10/84

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/L unless otherwise specified.

ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).

*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

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RECEIVED: 08/13/84

Analytical Serv
Results by Sample

REPORT

LAB # 84-08-129

SAMPLE ID RB-5-4, 175-180

FRACTION 94C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/10/84

Category

DATA FILE
CONC. FACTOR

B

DATE INJECTED 08/22/84

ANALYST
INSTRUMENT

MCL
b

VERIFIED BY JSG
COMPOUNDS DETECTED 1

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Chloromethane	ND		Trichloroethene	ND
	Bromomethane	ND		Dibromochloromethane *	ND
	Vinyl Chloride	ND		1,1,2-Trichloroethane *	ND
	Chloroethane	ND		cis-1,3-Dichloropropene *	ND
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND
	Trichlorofluoromethane	ND		Bromoform	ND
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane #	ND
	1,1-Dichloroethane	ND		Tetrachloroethylene #	ND
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND
	Chloroform	ND		1,3-Dichlorobenzene	ND
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND
1	1,1,1-Trichloroethane	0.9		1,4-Dichlorobenzene	ND
	Carbon Tetrachloride	ND			
	Bromodichloromethane	ND			
	1,2-Dichloropropane	ND			
	trans-1,3-Dichloropropene	ND			

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RECEIVED: 08/13/84
ANALYTICAL SERV REPORT
RESULTS BY SAMPLE
FRACTION 04C TEST CODE GC 601
NAME EPA METHOD 601/GC
DATE & TIME COLLECTED 08/10/84
CATEGORY

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
#Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

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RECEIVED: 08/13/84

Analytical Serv

Results by Sample

REPORT

LAB # 84-08-129

SAMPLE ID RB-5-5, 195-200

FRACTION 05C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/10/84

Category

DATA FILE _____
CONC. FACTOR _____

B

DATE INJECTED 08/22/84

ANALYST _____
INSTRUMENT _____

MCL _____
b

VERIFIED BY JSC
COMPOUNDS DETECTED 2

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Chloromethane	ND	_____	Trichloroethene	ND
_____	Bromomethane	ND	_____	Dibromochloromethane *	ND
_____	Vinyl Chloride	ND	_____	1,1,2-Trichloroethane *	ND
_____	Chloroethane	ND	_____	cis-1,3-Dichloropropene *	ND
_____	Methylene Chloride	ND	_____	2-Chloroethylvinyl Ether	ND
_____	Trichlorofluoromethane	ND	_____	Bromoform	ND
_____	1,1-Dichloroethene	ND	_____	1,1,2,2-Tetrachloroethane #	ND
_____	1,1-Dichloroethane	ND	_____	Tetrachloroethylene #	ND
_____	trans-1,2-Dichloroethene	ND	_____	Chlorobenzene	ND
_____	Chloroform	ND	_____	1,3-Dichlorobenzene	ND
1	1,2-Dichloroethane	0.5	_____	1,2-Dichlorobenzene	ND
2	1,1,1-Trichloroethane	1.6	_____	1,4-Dichlorobenzene	ND
_____	Carbon Tetrachloride	ND			
_____	Bromodichloromethane	ND			
_____	1,2-Dichloropropane	ND			
_____	trans-1,3-Dichloropropene	ND			

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CORPORATION

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Analytical Serv

Results by Sample

REPORT

LAB # 84-08-129

Continued From Above

SAMPLE ID RB-5-5, 195-200

FRACTION 05C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/10/84

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/L unless otherwise specified.

ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).

*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.

#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

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CORPORATION

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Analytical Serv

REPORT

NonReported Work

LAB # 84-08-129

FRACTION AND TEST CODES FOR WORK NOT REPORTED ELSEWHERE

01D : DUP601
02D : DUP601
03D : DUP601
04D : DUP601
05D : DUP601

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CORPORATION

PAGE 1

RECEIVED: 08/10/84

Analytical Serv

REPORT

LAB # 84-08-105

08/28/84 09:14:26

REPORT Radian

TO BL 4

Austin

or Sacramento

ATTEN Wayne Pearce

CLIENT MCCLELLAN AF

COMPANY McClellan AFB

FACILITY

SAMPLES 4

WORK ID Recon. Boring

TAKEN 8/9/84

TRANS hand carried

TYPE H2O

P.O. # 212-027-16

INVOICE under separate cover

PREPARED Radian Analytical Services

BY BL MoPac Blvd.

P.O. Box 9948

Austin, Texas 78766

ATTEN

PHONE (512) 454-4797

CONTACT CONOVER

CERTIFIED BY

Note: second column confirmation performed on all four samples. Only 1,2-dichloroethane and trichloroethene confirmed for OIC due to 1:50 dilution required.

SAMPLE IDENTIFICATION

01 RB-6-1, 95-100
02 RB-6-2, 135-140
03 RB-6-3, 175-180
04 RB-6-4, 195-260-200 *exp*

Analytical Serv TEST CODES and NAMES used on this report

CA E	Calcium, ICPEs
CL IC	Chloride IC
CO3 A	Carbonate
FE E	Iron, ICPEs
GC 601	EPA Method 601/GC
HCO3 A	Bicarbonate
MG E	Magnesium, ICPEs
NA E	Sodium, ICPEs
SO4 IC	Sulfate IC

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CORPORATION

PAGE 2

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Analytical Serv

REPORT

LAB # 84-08-105

RESULTS BY TEST

RB-6-1

RB-6-2

RB-6-3

RB-6-4

TEST CODE	Sample 01	Sample 02	Sample 03	Sample 04
default units	(entered units)	(entered units)	(entered units)	(entered units)
CA E	49	24	26	30
ug/ml				
CL IC	69	29	21	24
mg/L				
CO3 A	<1	<1	55	50
mg/L as CaCO3				
FE E	1.2	2.6	0.36	0.88
ug/ml				
HCO3 A	240	140	86	84
mg/L as CaCO3				
MG E	36	18	12	12
ug/ml				
NA E	31	24	20	21
ug/ml				
SO4 IC	87	10	7.7	8.4
mg/L				

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RECEIVED: 08/10/84

Analytical Serv
Results by Sample

REPORT

LAB # 84-08-105

SAMPLE ID RB-6-1, 95-100

FRACTION OIC

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/09/84

Category

DATA FILE _____
CONC. FACTOR _____

DATE INJECTED 08/16/84

ANALYST _____
INSTRUMENT _____

VERIFIED BY JSG
COMPOUNDS DETECTED 6

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Chloromethane	ND	5	Trichloroethene	242
_____	Bromomethane	ND	_____	Dibromochloromethane *	ND
_____	Vinyl Chloride	ND	_____	1,1,2-Trichloroethane *	ND
_____	Chloroethane	ND	_____	cis-1,3-Dichloropropene *	ND
_____	Methylene Chloride	ND	_____	2-Chloroethylvinyl Ether	ND
_____	Trichlorofluoromethane	ND	_____	Bromoform	ND
1	1,1-Dichloroethene	19.7	_____	1,1,2,2-Tetrachloroethane #	ND
2	1,1-Dichloroethane	5.1	_____	Tetrachloroethylene #	ND
3	trans-1,2-Dichloroethene	2.3	_____	Chlorobenzene	ND
_____	Chloroform	ND	6	1,3-Dichlorobenzene	41.6
4	1,2-Dichloroethane	110	_____	1,2-Dichlorobenzene	ND
_____	1,1,1-Trichloroethane	ND	_____	1,4-Dichlorobenzene	ND
_____	Carbon Tetrachloride	ND			
_____	Bromodichloromethane	ND			
_____	1,2-Dichloropropane	ND			
_____	trans-1,3-Dichloropropene	ND			

RADIAN
CORPORATION

PAGE 4

RECEIVED: 08/10/84

Analytical Serv

REPORT

LAB # 84-08-105

Results by Sample

Continued From Above

SAMPLE ID RB-6-1, 95-100

FRACTION O1C TEST CODE GC 601 NAME EPA Method 601/GC

Date & Time Collected 08/09/84

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/L unless otherwise specified.

ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).

*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.

#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

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RECEIVED: 08/10/84

Analytical Serv
Results by Sample

REPORT

LAB # 84-08-105

SAMPLE ID RB-6-2, 135-140

FRACTION 02C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/09/84

Category

DATA FILE	A	DATE INJECTED	08/16/84	ANALYST	RGS	VERIFIED BY	JSG
CONC. FACTOR				INSTRUMENT	a	COMPOUNDS DETECTED	4
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT		
	Chloromethane	ND	4	Trichloroethene	7.7		
	Bromomethane	ND		Dibromochloromethane	*	ND	
	Vinyl Chloride	ND		1,1,2-Trichloroethane	*	ND	
	Chloroethane	ND		cis-1,3-Dichloropropene	*	ND	
	Methylene Chloride	ND		2-Chloroethylvinyl Ether		ND	
	Trichlorofluoromethane	ND		Bromoform		ND	
1	1,1-Dichloroethene	1.3		1,1,2,2-Tetrachloroethane	#	ND	
2	1,1-Dichloroethane	0.1		Tetrachloroethylene	#	ND	
	trans-1,2-Dichloroethene	ND		Chlorobenzene		ND	
	Chloroform	ND		1,3-Dichlorobenzene		ND	
3	1,2-Dichloroethane	5.8		1,2-Dichlorobenzene		ND	
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene		ND	
	Carbon Tetrachloride	ND					
	Bromodichloromethane	ND					
	1,2-Dichloropropane	ND					
	trans-1,3-Dichloropropene	ND					

RADIAN
CORPORATION

PAGE 6

RECEIVED: 08/10/84

Analytical Serv

Results by Sample

REPORT

LAB # 84-08-105

Continued From Above

SAMPLE ID RB-6-2, 135-140

FRACTION 02C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/09/84

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/L unless otherwise specified.

ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).

*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.

#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

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RECEIVED: 08/10/84

Analytical Serv
Results by Sample

LAB # 84-08-105

SAMPLE ID RB-6-3, 175-180

FRACTION Q3C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/09/84

Category

DATA FILE _____ A _____ DATE INJECTED 08/16/84 ANALYST _____ RGS _____ VERIFIED BY JSQ
CONC. FACTOR _____ INSTRUMENT _____ a _____ COMPOUNDS DETECTED 1

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Chloromethane	ND	_____	Trichloroethene	ND
_____	Bromomethane	ND	_____	Dibromochloromethane *	ND
_____	Vinyl Chloride	ND	_____	1,1,2-Trichloroethane *	ND
_____	Chloroethane	ND	_____	cis-1,3-Dichloropropene *	ND
_____	Methylene Chloride	ND	_____	2-Chloroethylvinyl Ether	ND
_____	Trichlorofluoromethane	ND	_____	Bromoform	ND
_____	1,1-Dichloroethene	ND	_____	1,1,2,2-Tetrachloroethane #	ND
_____	1,1-Dichloroethane	ND	_____	Tetrachloroethylene #	ND
_____	trans-1,2-Dichloroethene	ND	_____	Chlorobenzene	ND
_____	Chloroform	ND	_____	1,3-Dichlorobenzene	ND
1	1,2-Dichloroethane	0.2	_____	1,2-Dichlorobenzene	ND
_____	1,1,1-Trichloroethane	ND	_____	1,4-Dichlorobenzene	ND
_____	Carbon Tetrachloride	ND			
_____	Bromodichloromethane	ND			
_____	1,2-Dichloropropane	ND			
_____	trans-1,3-Dichloropropene	ND			

RADIAAC
CORPORATION

PAGE 8

RECEIVED: 08/10/84

Analytical Serv

Results by Sample

REPORT

LAB # 84-08-105

Continued From Above

SAMPLE ID RB-6-3, 175-180

FRACTION 03C TEST CODE GC 601 NAME EPA Method 601/GC

Date & Time Collected 08/09/84

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/L unless otherwise specified.

ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).

*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.

#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

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Analytical Serv

Results by Sample

REPORT

LAB # 84-08-105

SAMPLE ID RB-6-4, 195-260

FRACTION 04C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/09/84

Category

DATA FILE _____
CONC. FACTOR _____

DATE INJECTED 08/16/84

ANALYST _____
INSTRUMENT _____

VERIFIED BY JSG
COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Chloromethane	ND	_____	Trichloroethene	ND
_____	Bromomethane	ND	_____	Dibromochloromethane *	ND
_____	Vinyl Chloride	ND	_____	1,1,2-Trichloroethane *	ND
_____	Chloroethane	ND	_____	cis-1,3-Dichloropropene *	ND
_____	Methylene Chloride	ND	_____	2-Chloroethylvinyl Ether	ND
_____	Trichlorofluoromethane	ND	_____	Bromoform	ND
_____	1,1-Dichloroethene	ND	_____	1,1,2,2-Tetrachloroethane #	ND
_____	1,1-Dichloroethane	ND	_____	Tetrachloroethylene #	ND
_____	trans-1,2-Dichloroethene	ND	_____	Chlorobenzene	ND
_____	Chloroform	ND	_____	1,3-Dichlorobenzene	ND
_____	1,2-Dichloroethane	ND	_____	1,2-Dichlorobenzene	ND
_____	1,1,1-Trichloroethane	ND	_____	1,4-Dichlorobenzene	ND
_____	Carbon Tetrachloride	ND			
_____	Bromodichloromethane	ND			
_____	1,2-Dichloropropane	ND			
_____	trans-1,3-Dichloropropene	ND			

RADIANC
CORPORATION

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RECEIVED: 08/10/84

Analytical Serv

Results by Sample

REPORT

LAB # 84-08-105

Continued From Above

SAMPLE ID RB-6-4, 195-260

FRACTION Q4C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/09/84

Category _____

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/L unless otherwise specified.

ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).

*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.

#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

RADIANCE
CORPORATION

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RECEIVED: 08/10/84

Analytical Serv

REPORT

NonReported Work

LAB # 84-08-105

FRACTION AND TEST CODES FOR WORK NOT REPORTED ELSEWHERE

01D : DUP601
02D : DUP601
03D : DUP601
04D : DUP601

PAGE 1

RECEIVED: 08/07/84

Analytical Serv

REPORT

LAB # 84-08-068

08/21/84 12:30:10

REPORT Radian
TO Bl 4

Austin

or Sacramento

ATTEN Wayne Pearce

CLIENT MCCLELLAN AF

COMPANY McClellan AFB

FACILITY

SAMPLES 4

WORK ID Recon. Boring

TAKEN 8/5/84 & 8/6/84

TRANS hand carried

TYPE H2O

P.O. # 212-027-16

INVOICE under separate cover

SAMPLE IDENTIFICATION

01 RB-11-1 88-100

02 RB-11-2 120-100

03 RB-11-3

04 RB-7-1, 95-100

PREPARED Radian Analytical Services

BY 8501 MoPac Blvd.

P.O. Box 9948

Austin, Texas 78766

ATTEN

PHONE (512) 454-4797

CONTACT CONOVER

CERTIFIED BY

Louise Newma

Analytical Serv TEST CODES and NAMES used on this report

CA E	Calcium, ICPEs
CL IC	Chloride IC
CO3 A	Carbonate
FE E	Iron, ICPEs
GC 601	EPA Method 601/GC
HCO3 A	Bicarbonate
MG E	Magnesium, ICPEs
NA E	Sodium, ICPEs
SO4 IC	Sulfate IC

CONTINUATION

PAGE 11
 RECEIVED: 08/07/84
 Analytical Serv
 Results by Sample
 REPORT
 LAB # 84-08-068

SAMPLE ID RB-7-1, 95-100		SAMPLE # 04		FRACTIONS: A, B, C, D	
Date & Time Collected 08/05/84		Category			
CA E	21 ug/ml	14 CL IC	14 CO3 A	<1 FE E	8.9 HCO3 A
		mg/L	mg/L as CaCO3	ug/ml	mg/L as CaCO3
NA E	24 ug/ml	24 SO4 IC	6		78 MG E
		ug/ml	mg/L		ug/ml

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RECEIVED: 08/07/84

Analytical Serv

REPORT

Results by Sample

LAB # 84-08-068

SAMPLE ID RB-7-1, 95-100

FRACTION 04C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/05/84

Category

DATA FILE _____
CONC. FACTOR _____

DATE INJECTED 08/10/84

ANALYST _____
INSTRUMENT _____VERIFIED BY JSG
COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Chloromethane	ND	_____	Trichloroethene	ND
_____	Bromomethane	ND	_____	Dibromochloromethane *	ND
_____	Vinyl Chloride	ND	_____	1,1,2-Trichloroethane *	ND
_____	Chloroethane	ND	_____	cis-1,3-Dichloropropene *	ND
_____	Methylene Chloride	ND	_____	2-Chloroethylvinyl Ether	ND
_____	Trichlorofluoromethane	ND	_____	Bromoform	ND
_____	1,1-Dichloroethene	ND	_____	1,1,2,2-Tetrachloroethane #	ND
_____	1,1-Dichloroethane	ND	_____	Tetrachloroethylene #	ND
_____	trans-1,2-Dichloroethene	ND	_____	Chlorobenzene	ND
_____	Chloroform	ND	_____	1,3-Dichlorobenzene	ND
_____	1,2-Dichloroethane	ND	_____	1,2-Dichlorobenzene	ND
_____	1,1,1-Trichloroethane	ND	_____	1,4-Dichlorobenzene	ND
_____	Carbon Tetrachloride	ND			
_____	Bromodichloromethane	ND			
_____	1,2-Dichloropropane	ND			
_____	trans-1,3-Dichloropropene	ND			

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RECEIVED: 08/07/84

Analytical Serv

REPORT

Results by Sample

LAB # 84-08-068

Continued From Above

SAMPLE ID RB-7-1, 95-100

FRACTION 04C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/05/84

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/L unless otherwise specified.

ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).

*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.

#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

CUMULATION

PAGE 14

RECEIVED: 08/07/84

Analytical Serv

REPORT

LAB # 84-08-068

NonReported Work

FRACTION AND TEST CODES FOR WORK NOT REPORTED ELSEWHERE

01D : DUP601
02D : DUP601
03D : DUP601
04D : DUP601

PAGE 1

RECEIVED: 08/07/84

Analytical Serv

REPORT

LAB # 84-08-071

08/21/84 12:35:25

REPORT Radian

TO BL 4

Austin

or Sacramento

ATTEN Wayne Pearce

CLIENT MCCLELLAN AF

COMPANY McClellan AFB

FACILITY

SAMPLES 2

WORK ID Recon Boring

TAKEN 8/7/84

TRANS hand carried

TYPE H2O

P O # 212-027-16

INVOICE under separate cover

PREPARED Radian Analytical Services

BY

8501 MoPac Blvd.

P.O. Box 9948

Austin, Texas 78766

ATTEN

PHONE (512) 454-4797

CONTACT CONOVER

CERTIFIED BY



SAMPLE IDENTIFICATION

01 RB-7-2, 135-140

02 RB-7-3, 155-160

Analytical Serv TEST CODES and NAMES used on this report

CA E Calcium, ICPES

CL IC Chloride IC

CO3 A Carbonate

FE E Iron, ICPES

GC 601 EPA Method 601/GC

HC03 A Bicarbonate

MG E Magnesium, ICPES

NA E Sodium, ICPES

SO4 IC Sulfate IC

COMPANION

PAGE 2

RECEIVED: 08/07/84

Analytical Serv

REPORT

LAB # 84-08-071

Results by Sample

SAMPLE ID RB-7-2, 135-140

SAMPLE # 01 FRACTIONS: A,B,C,D

Date & Time Collected 08/07/84

Category

CA E	18	CL IC	18	CO3 A	<1	FE E	1.8	HCO3 A	99	MG E	11
	ug/ml		mg/L	mg/L as CaCO3			ug/ml	mg/L as CaCO3			ug/ml

NA E	21	SO4 IC	5
	ug/ml		mg/L

LAB # 84-08-071

SAMPLE ID RB-7-2, 135-140

FRACTION 01C

NAME EPA Method 601/GC

Date & Time Collected 08/07/84

Category	Count
Category 1	10
Category 2	20
Category 3	30
Category 4	40
Category 5	50
Category 6	60
Category 7	70
Category 8	80
Category 9	90
Category 10	100

DATA FILE
CONC. FACTOR

4

DATE INJECTED 08/10/84

ANALYST
INSTRUMENTRGS

VERIFIED BY JSG
COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Chloromethane	<u>ND</u>	_____	Trichloroethene	<u>ND</u>
_____	Bromomethane	<u>ND</u>	_____	Dibromochloromethane *	<u>ND</u>
_____	Vinyl Chloride	<u>ND</u>	_____	1,1,2-Trichloroethane *	<u>ND</u>
_____	Chloroethane	<u>ND</u>	_____	cis-1,3-Dichloropropene *	<u>ND</u>
_____	Methylene Chloride	<u>ND</u>	_____	2-Chloroethylvinyl Ether	<u>ND</u>
_____	Trichlorofluoromethane	<u>ND</u>	_____	Bromoform	<u>ND</u>
_____	1,1-Dichloroethene	<u>ND</u>	_____	1,1,2,2-Tetrachloroethane #	<u>ND</u>
_____	1,1-Dichloroethane	<u>ND</u>	_____	Tetrachloroethylene #	<u>ND</u>
_____	trans-1,2-Dichloroethene	<u>ND</u>	_____	Chlorobenzene	<u>ND</u>
_____	Chloroform	<u>ND</u>	_____	1,3-Dichlorobenzene	<u>ND</u>
_____	1,2-Dichloroethane	<u>ND</u>	_____	1,2-Dichlorobenzene	<u>ND</u>
_____	1,1,1-Trichloroethane	<u>ND</u>	_____	1,4-Dichlorobenzene	<u>ND</u>
_____	Carbon Tetrachloride	<u>ND</u>			
_____	Bromodichloromethane	<u>ND</u>			
_____	1,2-Dichloropropane	<u>ND</u>			
_____	trans-1,3-Dichloropropene	<u>ND</u>			

CORPORATION

PAGE 4

RECEIVED: 08/07/84

Analytical Serv

REPORT

LAB # 84-08-071

Results by Sample

Continued From Above

SAMPLE ID RB-7-2, 135-140

FRACTION O1C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/07/84

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/L unless otherwise specified.

ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).

*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.

#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

COMPORATION

PAGE 5

RECEIVED: 08/07/84

Analytical Serv

REPORT

LAB # 84-08-071

Results by Sample

SAMPLE ID RB-7-3, 155-160

SAMPLE # 02 FRACTIONS: A, B, C, D

Date & Time Collected 08/07/84

Category

CA E	18	CL IC	11	CO3 A	<1	FE E	3.1	HCO3 A	128	MG E	11
	ug/ml		mg/L	mg/L as CaCO3			ug/ml	mg/L as CaCO3			ug/ml
NA E	18	SO4 IC	2								
	ug/ml		mg/L								

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RECEIVED: 08/07/84

Analytical Serv

REPORT

Results by Sample

LAB # 84-08-071

SAMPLE ID RB-7-3, 155-160

FRACTION 02C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/07/84

Category

DATA FILE
CONC. FACTOR

A

DATE INJECTED 08/10/84

ANALYST
INSTRUMENT

RGS

A

VERIFIED BY JSG
COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Chloromethane	ND		Trichloroethene	ND
	Bromomethane	ND		Dibromochloromethane *	ND
	Vinyl Chloride	ND		1,1,2-Trichloroethane *	ND
	Chloroethane	ND		cis-1,3-Dichloropropene *	ND
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND
	Trichlorofluoromethane	ND		Bromoform	ND
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane #	ND
	1,1-Dichloroethane	ND		Tetrachloroethylene #	ND
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND
	Chloroform	ND		1,3-Dichlorobenzene	ND
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND
	Carbon Tetrachloride	ND			
	Bromodichloromethane	ND			
	1,2-Dichloropropane	ND			
	trans-1,3-Dichloropropene	ND			

CORPORATION

PAGE 7

RECEIVED: 08/07/84

Analytical Serv

Results by Sample

LAB # 84-08-071

Continued From Above

SAMPLE ID RB-7-3, 155-160

FRACTION 02C

NAME EPA Method 601/GC

Date & Time Collected 08/07/84

Category

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.
 All results reported in ug/L unless otherwise specified.
 ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
 *Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
 #1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

CORPORATION

PAGE 8

RECEIVED: 08/07/84

Analytical Serv

REPORT

LAB # 84-08-071

NonReported Work

FRACTION AND TEST CODES FOR WORK NOT REPORTED ELSEWHERE

01D : DUP601
02D : DUP601

PAGE 1

RECEIVED: 07/30/84

Analytical Serv

REPORT

LAB # 84-07-180

08/14/84 12:39:06

REPORT Radian

TO Bl 4

Austin

or Sacramento

ATTEN Wayne Pearce

CLIENT MCCLELLAN AF

COMPANY McClellan AFB

FACILITY

SAMPLES 1

WORK ID Reconnaissance Boring

TAKEN 7/30/84, Toby

TRANS hand carried, Toby

TYPE H2O

P.O. # 212-027-16

INVOICE under separate cover

PREPARED Radian Analytical Services

BY 8501 MoPac Blvd.

P.O. Box 9948

Austin, Texas 78766

ATTEN

PHONE (512) 454-4797

CERTIFIED BY 

CONTACT CONOVER

GC-601/DUP-601 broken 7/31/84

SAMPLE IDENTIFICATION

01 McClellan RB-B-1, 100'

Analytical Serv TEST CODES and NAMES used on this report

CA E	Calcium, ICPEs
CL IC	Chloride IC
CO3 A	Carbonate
FE E	Iron, ICPEs
HCO3 A	Bicarbonate
MG E	Magnesium, ICPEs
NA E	Sodium, ICPEs
SO4 IC	Sulfate IC

Note: VOA Vials Broken During Handling -

No EPA 601 could be performed

PAGE 2

RECEIVED: 07/30/84

Analytical Serv

REPORT

LAB # 84-07-180

Results by Sample

SAMPLE ID		McClellan RB-8-1, 100'		SAMPLE # 01		FRACTIONS: A, B	
		Date & Time Collected		07/30/84		Category	
CA E	13	CL IC	14	CO3 A	<1	FE E	4.4
	ug/ml		mg/L		mg/L as CaCO3		ug/ml
NA E	17	SO4 IC	4			HCO3 A	69
	ug/ml		mg/L				mg/L as CaCO3
							ug/ml

RADIAN

PAGE 1

RECEIVED: 07/31/84

Analytical Serv

REPORT

LAB # 84-08-011

08/14/84 12:31:43

REPORT Radian

TO BL 4

Austin

or Sacramento

ATTEN Wayne Pearce

CLIENT MCCLELLAN AF

COMPANY McClellan AFB

FACILITY

SAMPLES 6

WORK ID Recon. Boring

TAKEN 7/31/84

TRANS hand carried

TYPE H2O

P. O. # 212-027-16

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PREPARED Radian Analytical Services

BY 8501 MoPac Blvd.

P.O. Box 9948

Austin, Texas 78766

ATTEN

PHONE (512) 454-4797

CERTIFIED BY

CONTACT CONOVER

SAMPLE IDENTIFICATION

01 RB-10-1 78-00
02 RB-10-2 78-100
03 RB-10-3 130-135
04 RB-8-2, 130-135
05 RB-8-3, 150-160
06 RB-8-4, 185-200

Analytical Serv TEST CODES and NAMES used on this report

CA E Calcium, ICPEs
CL IC Chloride IC
CO3 A Carbonate
FE E Iron, ICPEs
GC 601 EPA Method 601/GC
HCO3 A Bicarbonate
MG E Magnesium, ICPEs
NA E Sodium, ICPEs
SO4 IC Sulfate IC

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RECEIVED: 07/31/84

Analytical Serv

REPORT

LAB # 84-08-011

Results by Sample

SAMPLE ID RB-8-2, 130-135		SAMPLE # 04		FRACTIONS: A, B, C, D	
Date & Time Collected 07/31/84		Category			
CA E	15 ug/ml	CL IC	22 mg/L	CO3 A	<1 mg/L as CaCO3
NA E	21 ug/ml	SO4 IC	7 mg/L	FE E	1.7 ug/ml
				HCO3 A	99 mg E
					ug/ml

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RECEIVED: 07/31/84

Analytical Serv
Results by Sample

LAB # 84-08-011

SAMPLE ID RB-8-2, 130-135

FRACTION 04C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 07/31/84

Category

DATA FILE
CONC. FACTOR

A

DATE INJECTED 08/09/84

ANALYST
INSTRUMENT

RGS

VERIFIED BY JSG
COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Chloromethane	ND		Trichloroethene	ND
	Bromomethane	ND		Dibromochloromethane *	ND
	Vinyl Chloride	ND		1,1,2-Trichloroethane *	ND
	Chloroethane	ND		cis-1,3-Dichloropropene *	ND
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND
	Trichlorofluoromethane	ND		Bromoform	ND
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane #	ND
	1,1-Dichloroethane	ND		Tetrachloroethylene #	ND
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND
	Chloroform	ND		1,3-Dichlorobenzene	ND
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND
	Carbon Tetrachloride	ND			
	Bromodichloromethane	ND			
	1,2-Dichloropropane	ND			
	trans-1,3-Dichloropropene	ND			

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RECEIVED: 07/31/84

Analytical Serv

Results by Sample

REPORT

LAB # 84-08-011

Continued From Above

SAMPLE ID RB-8-2, 130-135

FRACTION 04C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 07/31/84

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/L unless otherwise specified.

ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).

*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.

#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

PAGE 14
RECEIVED: 07/31/84

Analytical Serv
Results by Sample

LAB # 84-08-011

SAMPLE ID RB-8-3, 150-160		SAMPLE # 05 FRACTIONS: A, B, C, D	
Date & Time Collected 07/31/84		Category	
CA E	14 CL IC ug/ml	18 CO3 A mg/L	<1 FE E ug/ml
NA E	20 SO4 IC ug/ml	5	2.8 HCO3 A mg/L as CaCO3
		80 MG E	11 ug/ml

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RECEIVED: 07/31/84

Analytical Serv

REPORT

Results by Sample

LAB # 84-08-011

SAMPLE ID RB-8-3, 150-160

FRACTION 05C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 07/31/84

Category

DATA FILE _____ A _____ DATE INJECTED 08/09/84 ANALYST _____ RGS _____ VERIFIED BY JSG
CONC. FACTOR _____ INSTRUMENT _____ A _____ COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Chloromethane	ND	_____	Trichloroethene	ND
_____	Bromomethane	ND	_____	Dibromochloromethane *	ND
_____	Vinyl Chloride	ND	_____	1,1,2-Trichloroethane *	ND
_____	Chloroethane	ND	_____	cis-1,3-Dichloropropene *	ND
_____	Methylene Chloride	ND	_____	2-Chloroethylvinyl Ether	ND
_____	Trichlorofluoromethane	ND	_____	Bromoform	ND
_____	1,1-Dichloroethene	ND	_____	1,1,2,2-Tetrachloroethane #	ND
_____	1,1-Dichloroethane	ND	_____	Tetrachloroethylene #	ND
_____	trans-1,2-Dichloroethene	ND	_____	Chlorobenzene	ND
_____	Chloroform	ND	_____	1,3-Dichlorobenzene	ND
_____	1,2-Dichloroethane	ND	_____	1,2-Dichlorobenzene	ND
_____	1,1,1-Trichloroethane	ND	_____	1,4-Dichlorobenzene	ND
_____	Carbon Tetrachloride	ND			
_____	Bromodichloromethane	ND			
_____	1,2-Dichloropropane	ND			
_____	trans-1,3-Dichloropropene	ND			

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RECEIVED: 07/31/84
ANALYTICAL SERV
RESULTS BY SAMPLE
FRACTION 05C
TEST CODE GC 601
NAME EPA METHOD 601/GC
LAB # 84-08-011
CONTINUED FROM ABOVE
DATE & TIME COLLECTED 07/31/84
CATEGORY

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

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RECEIVED: 07/31/84

Analytical Serv
Results by Sample

REPORT
LAB # 84-08-011

SAMPLE ID RB-8-4, 185-200		SAMPLE # 06		FRACTIONS: A, B, C, D	
Date & Time Collected 07/31/84		Category			
CA E	15 ug/ml	CL IC	18 mg/L	CO3 A	18 mg/L as CaCO3
NA E	22 ug/ml	S04 IC	6 mg/L	FE E	2.0 ug/ml
				HCO3 A	83 mg E
					11 ug/ml

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RECEIVED: 07/31/84

Analytical Serv

Results by Sample

REPORT

LAB # 84-08-011

SAMPLE ID RB-8-4, 185-200

FRACTION 06C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 07/31/84

Category

DATA FILE _____ A DATE INJECTED 08/09/84 ANALYST _____ RGS VERIFIED BY JSG
CONC. FACTOR _____ INSTRUMENT _____ A COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Chloromethane	ND	_____	Trichloroethene	ND
_____	Bromomethane	ND	_____	Dibromochloromethane *	ND
_____	Vinyl Chloride	ND	_____	1,1,2-Trichloroethane *	ND
_____	Chloroethane	ND	_____	cis-1,3-Dichloropropene *	ND
_____	Methylene Chloride	ND	_____	2-Chloroethylvinyl Ether	ND
_____	Trichlorofluoromethane	ND	_____	Bromoform	ND
_____	1,1-Dichloroethene	ND	_____	1,1,2,2-Tetrachloroethane #	ND
_____	1,1-Dichloroethane	ND	_____	Tetrachloroethylene #	ND
_____	trans-1,2-Dichloroethene	ND	_____	Chlorobenzene	ND
_____	Chloroform	ND	_____	1,3-Dichlorobenzene	ND
_____	1,2-Dichloroethane	ND	_____	1,2-Dichlorobenzene	ND
_____	1,1,1-Trichloroethane	ND	_____	1,4-Dichlorobenzene	ND
_____	Carbon Tetrachloride	ND			
_____	Bromodichloromethane	ND			
_____	1,2-Dichloropropane	ND			
_____	trans-1,3-Dichloropropene	ND			

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RECEIVED: 07/31/84
ANALYTICAL SERV
Results by Sample
LAB # 84-08-011
Continued From Above
SAMPLE ID RB-8-4, 185-200
FRACTION 06C
TEST CODE GC 601
NAME EPA Method 601/GC
Date & Time Collected 07/31/84
Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

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RECEIVED: 07/31/84

Analytical Serv

REPORT

LAB # 84-08-011

NonReported Work

FRACTION AND TEST CODES FOR WORK NOT REPORTED ELSEWHERE

01D : DUP601
02D : DUP601
03D : DUP601
04D : DUP601
05D : DUP601
06D : DUP601

PAGE 1

RECEIVED: 08/08/84

Analytical Serv

REPORT

LAB # 84-08-088

08/20/84 16:18:35

REPORT Radian

TO BL 4

Austin

or Sacramento

ATTEN Wayne Pearce

CLIENT MCCLELLAN AF

COMPANY McClellan AFB

FACILITY

SAMPLES 4

WORK ID Recon. Boring

TAKEN 8/8/84, D. Rickmann

TRANS hand carried

TYPE H2O

P O # 212-027-16

INVOICE under separate cover

PREPARED Radian Analytical Services

BY 8501 MoPac Blvd.

P.O. Box 9948

Austin, Texas 78766

ATTEN

PHONE (512) 454-4797

CERTIFIED BY

CONTACT CONOVER

Rance Newman

SAMPLE IDENTIFICATION

01 RB-9-1, 99-100
 02 RB-9-2, 120
 03 RB-9-3, 140-160
 04 RB-9-4, 165-180

Analytical Serv TEST CODES and NAMES used on this report

CA E Calcium, ICPEs
 CL IC Chloride IC
 CO3 A Carbonate
 FE E Iron, ICPEs
 GC 601 EPA Method 601/GC
 HCO3 A Bicarbonate
 MG E Magnesium, ICPEs
 NA E Sodium, ICPEs
 SO4 IC Sulfate IC

PAGE 2
 RECEIVED: 08/08/84
 Analytical Serv
 Results by Sample
 REPORT
 LAB # 84-08-088

SAMPLE ID RB-9-1, 99-100		SAMPLE # 01		FRACTIONS: A, B, C, D	
Date & Time Collected 08/08/84		Category			
CA E	32 ug/ml	21 CL IC	21 mg/L	54 CO3 A	54 mg/L as CaCO3
NA E	26 ug/ml	20 S04 IC	20 mg/L	0.51 FE E	0.51 ug/ml
				88 HCO3 A	88 mg/L as CaCO3
					11 ug/ml

PAGE 3

RECEIVED: 08/08/84

Analytical Serv

REPORT

LAB # 84-08-088

Results by Sample

SAMPLE ID RB-9-1, 99-100

FRACTION Q1C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/08/84

Category

DATA FILE _____ A _____ DATE INJECTED 08/14/84 ANALYST _____ MCL _____ VERIFIED BY JSG
 CONC. FACTOR _____ INSTRUMENT _____ A _____ COMPOUNDS DETECTED 1

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Chloromethane	ND	_____	Trichloroethene	ND
_____	Bromomethane	ND	_____	Dibromochloromethane *	ND
_____	Vinyl Chloride	ND	_____	1,1,2-Trichloroethane *	ND
_____	Chloroethane	ND	_____	cis-1,3-Dichloropropene *	ND
_____	Methylene Chloride	ND	_____	2-Chloroethylvinyl Ether	ND
1	Trichlorofluoromethane	0.3	_____	Bromoform	ND
_____	1,1-Dichloroethene	ND	_____	1,1,2,2-Tetrachloroethane #	ND
_____	1,1-Dichloroethane	ND	_____	Tetrachloroethylene #	ND
_____	trans-1,2-Dichloroethene	ND	_____	Chlorobenzene	ND
_____	Chloroform	ND	_____	1,3-Dichlorobenzene	ND
_____	1,2-Dichloroethane	ND	_____	1,2-Dichlorobenzene	ND
_____	1,1,1-Trichloroethane	ND	_____	1,4-Dichlorobenzene	ND
_____	Carbon Tetrachloride	ND			
_____	Bromodichloromethane	ND			
_____	1,2-Dichloropropane	ND			
_____	trans-1,3-Dichloropropene	ND			

CORPORATION

PAGE 4

RECEIVED: 08/08/84

Analytical Serv

REPORT

LAB # 84-08-088

Results by Sample

Continued From Above

SAMPLE ID RB-9-1, 99-100

FRACTION 01C TEST CODE GC 601 NAME EPA Method 601/GC

Date & Time Collected 08/08/84

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/L unless otherwise specified.

ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).

*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.

#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

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RECEIVED: 08/08/84

Analytical Serv

REPORT

LAB # 84-08-088

Results by Sample

SAMPLE ID RB-9-2, 120		SAMPLE # 02		FRACTIONS: A,B,C,D	
Date & Time Collected 08/08/84		Category			
CA E	20 ug/ml	CL IC	18 mg/L	CO3 A	<1 mg/L as CaCO3
				FE E	4.2 ug/ml
				HCO3 A	99 mg E
					14 ug/ml
NA E	21 ug/ml	SO4 IC	11 mg/L		

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RECEIVED: 08/08/84

Analytical Serv

REPORT

LAB # 84-08-088

Results by Sample

SAMPLE ID RB-9-2, 120

FRACTION 02C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/08/84

Category

DATA FILE	A	DATE INJECTED	08/14/84	ANALYST	MCL	VERIFIED BY	USC
CONC. FACTOR				INSTRUMENT	A	COMPOUNDS DETECTED	Q
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT		
	Chloromethane	ND		Trichloroethene	ND		
	Bromomethane	ND		Dibromochloromethane	*	ND	
	Vinyl Chloride	ND		1,1,2-Trichloroethane	*	ND	
	Chloroethane	ND		cis-1,3-Dichloropropene	*	ND	
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND		
	Trichlorofluoromethane	ND		Bromoform	ND		
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	#	ND	
	1,1-Dichloroethane	ND		Tetrachloroethylene	#	ND	
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND		
	Chloroform	ND		1,3-Dichlorobenzene	ND		
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND		
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND		
	Carbon Tetrachloride	ND					
	Bromodichloromethane	ND					
	1,2-Dichloropropane	ND					
	trans-1,3-Dichloropropene	ND					

CORPORATION

PAGE 7

RECEIVED: 08/08/84

Analytical Serv

REPORT

Results by Sample

LAB # 84-08-088

Continued From Above

SAMPLE ID RB-9-2, 120

FRACTION 02C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/08/84

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/L unless otherwise specified.

ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).

*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.

#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

PAGE 8
RECEIVED: 08/08/84

Analytical Serv
Results by Sample

LAB # 84-08-088

REPORT

SAMPLE ID RB-9-3, 140-160

SAMPLE # 03 FRACTIONS: A,B,C,D

Date & Time Collected 08/08/84

Category

CA E 22 CL IC 20 CO₃ A 20 FE E 3.7 HCO₃ A 98 MG E 17
ug/ml mg/L mg/L as CaCO₃ ug/ml mg/L as CaCO₃ ug/ml

NA E 21 SO₄ IC 7.5
ug/ml mg/L

PAGE 9

RECEIVED: 08/08/84

Analytical Serv

REPORT

Results by Sample

LAB # 84-08-088

SAMPLE ID RB-9-3, 140-160

FRACTION 03C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/08/84

Category

DATA FILE
CONC FACTOR

A

DATE INJECTED 08/14/84

ANALYST
INSTRUMENT

MCL

VERIFIED BY JSG
COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Chloromethane	ND		Trichloroethene	ND
	Bromomethane	ND		Dibromochloromethane *	ND
	Vinyl Chloride	ND		1,1,2-Trichloroethane *	ND
	Chloroethane	ND		cis-1,3-Dichloropropene *	ND
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND
	Trichlorofluoromethane	ND		Bromoform	ND
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane #	ND
	1,1-Dichloroethane	ND		Tetrachloroethylene #	ND
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND
	Chloroform	ND		1,3-Dichlorobenzene	ND
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND
	Carbon Tetrachloride	ND			
	Bromodichloromethane	ND			
	1,2-Dichloropropane	ND			
	trans-1,3-Dichloropropene	ND			

CORPORATION

PAGE 10
 RECEIVED: 08/08/84
 Analytical Serv
 Results by Sample
 REPORT
 LAB # 84-08-088
 Continued From Above
 SAMPLE ID RB-9-3, 140-160
 FRACTION 03C
 TEST CODE GC 601
 NAME EPA Method 601/GC
 Date & Time Collected 08/08/84
 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
 All results reported in ug/L unless otherwise specified.
 ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
 *Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
 #1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

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Analytical Serv

REPORT

LAB # 84-08-088

Results by Sample

SAMPLE ID RB-9-4, 165-180

SAMPLE # 04 FRACTIONS: A,B,C,D

Date & Time Collected 08/08/84

Category

CA E 19 CL IC 21 CO3 A 21 FE E 2.3 HCO3 A 93 MG E 13
ug/ml mg/L mg/L as CaCO3 ug/ml mg/L as CaCO3 ug/ml

NA E 24 SO4 IC 7.0
ug/ml mg/L

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Analytical Serv

REPORT

Results by Sample

LAB # 84-08-088

SAMPLE ID RB-9-4, 165-180

FRACTION 04C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/08/84

Category

DATA FILE	A	DATE INJECTED	08/14/84	ANALYST	MCL	VERIFIED BY	JSG
CONC. FACTOR				INSTRUMENT	A	COMPOUNDS DETECTED	0
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT		
	Chloromethane	ND		Trichloroethene	ND		
	Bromomethane	ND		Dibromochloromethane	*	ND	
	Vinyl Chloride	ND		1,1,2-Trichloroethane	*	ND	
	Chloroethane	ND		cis-1,3-Dichloropropene	*	ND	
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND		
	Trichlorofluoromethane	ND		Bromoform	ND		
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	#	ND	
	1,1-Dichloroethane	ND		Tetrachloroethylene	#	ND	
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND		
	Chloroform	ND		1,3-Dichlorobenzene	ND		
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND		
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND		
	Carbon Tetrachloride	ND					
	Bromodichloromethane	ND					
	1,2-Dichloropropane	ND					
	trans-1,3-Dichloropropene	ND					

COMPUTATION

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 Analytical Serv
 Results by Sample
 LAB # 84-08-088
 Continued From Above
 SAMPLE ID RB-9-4, 165-180
 FRACTION 04C
 TEST CODE GC 601
 NAME EPA Method 601/GC
 Date & Time Collected 08/08/84
 Category

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.
 All results reported in ug/L unless otherwise specified.
 ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
 *Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
 #1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

CONFIDENTIAL

LAB # 84-08-088

Analytical Serv REPORT
NonReported Work

PAGE 14

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FRACTION AND TEST CODES FOR WORK NOT REPORTED ELSEWHERE

01D : DUP601
02D : DUP601
03D : DUP601
04D : DUP601

PAGE 1

RECEIVED: 07/31/84

Analytical Serv

REPORT

LAB # 84-08-011

08/14/84 12:31:43

REPORT Radian
TO B1 4

Austin

or Sacramento

ATTEN Wayne Pearce

CLIENT MCCLELLAN AF

COMPANY McClellan AFB

FACILITY

SAMPLES 6

WORK ID Recon. Boring

TAKEN 7/31/84

TRANS hand carried

TYPE H2O

P. O. # 212-027-16

INVOICE under separate cover

PREPARED Radian Analytical Services

BY 8501 MoPac Blvd.

P. O. Box 9948

Austin, Texas 78766

ATTEN

PHONE (512) 454-4797

CERTIFIED BY

CONTACT CONOVER

SAMPLE IDENTIFICATION

01 RB-10-1, 78-80
02 RB-10-2, 98-100
03 RB-10-3, 138-140
04 RB-8-2, 130-135
05 RB-8-3, 150-180
06 RB-8-4, 180-200

Analytical Serv TEST CODES and NAMES used on this report

CA E Calcium, ICPE
CL IC Chloride IC
CO3 A Carbonate
FE E Iron, ICPE
GC 601 EPA Method 601/GC
HC03 A Bicarbonate
MG E Magnesium, ICPE
NA E Sodium, ICPE
SO4 IC Sulfate IC

PAGE 2

RECEIVED: 07/31/84

Analytical Serv

REPORT

LAB # 84-08-011

Results by Sample

SAMPLE ID RB-10-1, 78-80

SAMPLE # 01 FRACTIONS: A, B, C, D

Date & Time Collected 07/31/84

Category

CA E	24	CL IC	26	CO3 A	<1	FE E	4.7	HCO3 A	120	MG E	19
	ug/ml		mg/L		mg/L as CaCO3		ug/ml		mg/L as CaCO3		ug/ml
NA E	26	S04 IC	10								
	ug/ml		mg/L								

PAGE 3

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Analytical Serv

Results by Sample

REPORT

LAB # 84-08-011

SAMPLE ID RB-10-1, 78-80

FRACTION 01C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 07/31/84

Category

DATA FILE		A	DATE INJECTED	08/09/84	ANALYST	RGS	VERIFIED BY JSG	
CONC	FACTOR				INSTRUMENT	A	COMPOUNDS DETECTED	O
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT			
_____	Chloromethane	ND	_____	Trichloroethene	ND			
_____	Bromomethane	ND	_____	Dibromochloromethane	#	ND		
_____	Vinyl Chloride	ND	_____	1,1,2-Trichloroethane	#	ND		
_____	Chloroethane	ND	_____	cis-1,3-Dichloropropene	#	ND		
_____	Methylene Chloride	ND	_____	2-Chloroethylvinyl Ether		ND		
_____	Trichlorofluoromethane	ND	_____	Bromoform		ND		
_____	1,1-Dichloroethene	ND	_____	1,1,2,2-Tetrachloroethane	#	ND		
_____	1,1-Dichloroethane	ND	_____	Tetrachloroethylene	#	ND		
_____	trans-1,2-Dichloroethene	ND	_____	Chlorobenzene		ND		
_____	Chloroform	ND	_____	1,3-Dichlorobenzene		ND		
_____	1,2-Dichloroethane	ND	_____	1,2-Dichlorobenzene		ND		
_____	1,1,1-Trichloroethane	ND	_____	1,4-Dichlorobenzene		ND		
_____	Carbon Tetrachloride	ND						
_____	Bromodichloromethane	ND						
_____	1,2-Dichloropropane	ND						
_____	trans-1,3-Dichloropropene	ND						

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Analytical Serv

Results by Sample

REPORT

LAB # 84-08-011

Continued From Above

SAMPLE ID RB-10-1, 78-80

FRACTION O1C TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 07/31/84

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/L unless otherwise specified.

ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).

*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.

#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

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Analytical Serv
Results by Sample

LAB # 84-08-011

SAMPLE ID RB-10-2, 98-100		SAMPLE # 02		FRACTIONS: A, B, C, D	
Date & Time Collected 07/31/84		Category			
CA E	22 ug/ml	CL IC	24 mg/L	CO3 A	<1 mg/L as CaCO3
FE E	2.2 ug/ml	HC03 A	110 mg/L as CaCO3	18	ug/ml
NA E	25 ug/ml	S04 IC	10 mg/L		

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Analytical Serv

Results by Sample

REPORT

LAB # 84-08-011

SAMPLE ID RB-10-2, 98-100

FRACTION Q2C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 07/31/84

Category

DATA FILE CONC. FACTOR	A	DATE INJECTED	08/09/84	ANALYST INSTRUMENT	RGS	VERIFIED BY	JSG
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT	COMPOUNDS DETECTED	0
	Chloromethane	ND		Trichloroethene	ND		
	Bromomethane	ND		Dibromochloromethane	*	ND	
	Vinyl Chloride	ND		1,1,2-Trichloroethane	*	ND	
	Chloroethane	ND		cis-1,3-Dichloropropene	*	ND	
	Methylene Chloride	ND		2-Chloroethylvinyl Ether		ND	
	Trichlorofluoromethane	ND		Bromoform		ND	
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	#	ND	
	1,1-Dichloroethane	ND		Tetrachloroethylene	#	ND	
	trans-1,2-Dichloroethene	ND		Chlorobenzene		ND	
	Chloroform	ND		1,3-Dichlorobenzene		ND	
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene		ND	
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene		ND	
	Carbon Tetrachloride	ND					
	Bromodichloromethane	ND					
	1,2-Dichloropropane	ND					
	trans-1,3-Dichloropropene	ND					

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Analytical Serv

Results by Sample

REPORT

LAB # 84-08-011

Continued From Above

SAMPLE ID RB-10-2, 98-100

FRACTION 02C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 07/31/84

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/L unless otherwise specified.

ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).

*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.

#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

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RECEIVED: 07/31/84

Analytical Serv

REPORT

LAB # 84-08-011

Results by Sample

SAMPLE ID RB-10-3, 138-140

SAMPLE # 03 FRACTIONS: A, B, C, D

Date & Time Collected 07/31/84

Category

CA E	120	CL IC	21	CO3 A	<1	FE E	47	HCO3 A	77	MG E	110
	ug/ml		mg/L	mg/L as CaCO3			ug/ml	mg/L as CaCO3			ug/ml
NA E	25	SO4 IC	6								
	ug/ml		mg/L								

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Analytical Serv

Results by Sample

REPORT

LAB # 84-08-011

SAMPLE ID RB-10-3, 138-140

FRACTION 03C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 07/31/84

Category

DATA FILE _____ A DATE INJECTED 08/09/84 ANALYST _____ RGS VERIFIED BY JSG
CONC. FACTOR _____ INSTRUMENT _____ A COMPOUNDS DETECTED 1

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Chloromethane	ND	_____	Trichloroethene	ND
_____	Bromomethane	ND	_____	Dibromochloromethane *	ND
_____	Vinyl Chloride	ND	_____	1,1,2-Trichloroethane *	ND
_____	Chloroethane	ND	_____	cis-1,3-Dichloropropene *	ND
_____	Methylene Chloride	ND	_____	2-Chloroethylvinyl Ether	ND
1	Trichlorofluoromethane	0.4	_____	Bromoform	ND
_____	1,1-Dichloroethene	ND	_____	1,1,2,2-Tetrachloroethane #	ND
_____	1,1-Dichloroethane	ND	_____	Tetrachloroethylene #	ND
_____	trans-1,2-Dichloroethene	ND	_____	Chlorobenzene	ND
_____	Chloroform	ND	_____	1,3-Dichlorobenzene	ND
_____	1,2-Dichloroethane	ND	_____	1,2-Dichlorobenzene	ND
_____	1,1,1-Trichloroethane	ND	_____	1,4-Dichlorobenzene	ND
_____	Carbon Tetrachloride	ND			
_____	Bromodichloromethane	ND			
_____	1,2-Dichloropropane	ND			
_____	trans-1,3-Dichloropropene	ND			



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RECEIVED: 07/31/84

Analytical Serv

Results by Sample

LAB # 84-08-011

Continued From Above

SAMPLE ID RB-10-3, 138-140

FRACTION 03C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 07/31/84

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/L unless otherwise specified.

ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).

*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.

#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

PAGE 1

RECEIVED: 08/02/84

Analytical Serv

REPORT

LAB # 84-08-015

08/14/84 12:23:31

REPORT Radian
TO BL 4

Austin

or Sacramento

ATTEN Wayne Pearce

CLIENT MCCLELLAN AF SAMPLES 1
COMPANY McClellan AFB
FACILITY

WORK ID Recon. Boring

TAKEN 8/1/84, Toby Walters

TRANS hand carried

TYPE H2O

P O. # 212-027-16

INVOICE under separate cover

PREPARED Radian Analytical Services

BY 8501 MoPac Blvd.

P.O. Box 9948

Austin, Texas 78766

ATTEN

PHONE (512) 454-4797

CERTIFIED BY LM

CONTACT CONOVER

SAMPLE IDENTIFICATION

01 RB-10-4, 159-160

Analytical Serv TEST CODES and NAMES used on this report

CA E	Calcium, ICPEs
CL IC	Chloride IC
CO3 A	Carbonate
FE E	Iron, ICPEs
GC 601	EPA Method 601/GC
HCO3 A	Bicarbonate
MG E	Magnesium, ICPEs
NA E	Sodium, ICPEs
SO4 IC	Sulfate IC

PAGE 2
RECEIVED: 08/02/84

Analytical Serv
Results by Sample

LAB # 84-08-015

SAMPLE ID RB-10-4, 159-160		SAMPLE # 01		FRACTIONS: A, B, C, D	
Date & Time Collected 08/01/84		Category			
CA E	14 ug/ml	CL IC	17 mg/L	CO3 A	<1 mg/L as CaCO3
NA E	20 ug/ml	S04 IC	5 mg/L	HCO3 A	1.7 ug/ml
					75 MG E
					10 ug/ml

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RECEIVED: 08/02/84

Analytical Serv

Results by Sample

REPORT

LAB # 84-08-015

SAMPLE ID RB-10-4, 159-160

FRACTION 01C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/01/84

Category

DATA FILE
CONC. FACTOR

A

DATE INJECTED 08/09/84

ANALYST
INSTRUMENT

RAM

A

VERIFIED BY JSG
COMPOUNDS DETECTED 0

SCAN

COMPOUND

RESULT

SCAN

COMPOUND

RESULT

Chloromethane	ND		Trichloroethene	ND
Bromomethane	ND		Dibromochloromethane *	ND
Vinyl Chloride	ND		1,1,2-Trichloroethane *	ND
Chloroethane	ND		cis-1,3-Dichloropropene *	ND
Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND
Trichlorofluoromethane	ND		Bromoform	ND
1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane #	ND
1,1-Dichloroethane	ND		Tetrachloroethylene #	ND
trans-1,2-Dichloroethene	ND		Chlorobenzene	ND
Chloroform	ND		1,3-Dichlorobenzene	ND
1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND
1,1,1-Trichloroethane	ND			

01D : DUP601

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RECEIVED: 08/02/84

Analytical Serv

Results by Sample

REPORT

LAB # 84-08-015

Continued From Above

SAMPLE ID RB-10-4, 159-160

FRACTION Q1C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/01/84

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/L unless otherwise specified.

ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).

*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.

#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

LABORATORY
CORPORATION

PAGE 5

RECEIVED: 08/02/84

Analytical Serv

REPORT

NonReported Work

LAB # 84-08-015

FRACTION AND TEST CODES FOR WORK NOT REPORTED ELSEWHERE

01D : DUP601

LAB # 84-08-068

REPORT Radian

TO B1 4

4

Austin

OR SACRAMENTO

ATTEN Wayne Pearce

CLIENT MCCLELLAN AF

COMPANY McClellan AFB

FACILITY

WORK ID Recon. Boring

TAKEN 8/5/84 & 8/6/84

TRANS hand carried

TYPE	H ₂ O
------	------------------

P.O. # 212-027-16

INVOICE under separate cover

SAMPLE IDENTIFICATION

01 RB-11-1, 98-100

02 RB-11-2, 130-140

03 RB-11-3

~~001 000 7 4 56 100~~

Analytical Serv TEST CODES and NAMES used on this report

CAE, Calcium, ICPE

<u>CL IC</u>	<u>Chloride IC</u>
--------------	--------------------

CO3 A Carbonate

FREE Iron, ICPS

GC 601 EPA Method 601/GC

HC03 A Bicarbonate

MG E Magnesium, CPES

NA E Sodium, ICPS

Sulfate IC

SECRET

PREPARED Radian Analytical Services

BY 8501 MoPac Blvd.

P. O. Box 9948

Austin, Texas 78766

ATTEN

PHONE (512) 454-4797

CERTIFIED BY

CONTACT CONOVER

CONFIRMATION

PAGE 2

RECEIVED: 08/07/84

Analytical Serv

REPORT

LAB # 84-08-068

Results by Sample

SAMPLE ID RB-11-1, 98-100		SAMPLE # 01		FRACTIONS: A, B, C, D	
Date & Time Collected 08/06/84		Category			
CA E	15 ug/ml	CL IC	20 mg/L	CO3 A	20 mg/L as CaCO3
NA E	21 ug/ml	S04 IC	7 mg/L	FE E	1.1 ug/ml
				HCO3 A	90 mg E
					11 ug/ml

CORPORATION

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RECEIVED: 08/07/84

Analytical Serv

REPORT

Results by Sample

LAB # 84-08-068

SAMPLE ID RB-11-1, 98-100

FRACTION 01C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/06/84

Category

DATA FILE	B	DATE INJECTED	08/10/84	ANALYST	RGS	VERIFIED BY	JSG
CONC. FACTOR				INSTRUMENT	B	COMPOUNDS DETECTED	1
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT		
	Chloromethane	ND		Trichloroethene	ND		
	Bromomethane	ND		Dibromochloromethane *	ND		
	Vinyl Chloride	ND		1,1,2-Trichloroethane *	ND		
	Chloroethane	ND		cis-1,3-Dichloropropene *	ND		
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND		
1	Trichlorofluoromethane	0.2		Bromoform	ND		
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane #	ND		
	1,1-Dichloroethane	ND		Tetrachloroethylene #	ND		
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND		
	Chloroform	ND		1,3-Dichlorobenzene	ND		
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND		
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND		
	Carbon Tetrachloride	ND					
	Bromodichloromethane	ND					
	1,2-Dichloropropane	ND					
	trans-1,3-Dichloropropene	ND					

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RECEIVED: 08/07/84

Analytical Serv

REPORT

Results by Sample

LAB # 84-08-068

Continued From Above

SAMPLE ID RB-11-1, 98-100

FRACTION 01C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/06/84

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/L unless otherwise specified.

ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).

*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.

#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

CONFIRMATION

PAGE 5

RECEIVED: 08/07/84

Analytical Serv

REPORT

LAB # 84-08-068

Results by Sample

SAMPLE ID RB-11-2, 130-140

SAMPLE # 02 FRACTIONS: A,B,C,D

Date & Time Collected 08/06/84

Category

CA E	19	CL IC	19	CO3 A	<1	FE E	1.3	HCO3 A	104	MG E	14
	ug/ml		mg/L		mg/L as CaCO3		ug/ml		mg/L as CaCO3		ug/ml
NA E	19	SO4 IC	6								
	ug/ml		mg/L								

PAGE 6

RECEIVED: 08/07/84

Analytical Serv

REPORT

LAB # 84-08-068

Results by Sample

SAMPLE ID RB-11-2, 130-140

FRACTION 02C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/06/84

Category

DATA FILE _____
CONC. FACTOR _____

B

DATE INJECTED 08/10/84

ANALYST _____
INSTRUMENT _____

RGS

VERIFIED BY JSG
COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Chloromethane	ND	_____	Trichloroethene	ND
_____	Bromomethane	ND	_____	Dibromochloromethane *	ND
_____	Vinyl Chloride	ND	_____	1,1,2-Trichloroethane *	ND
_____	Chloroethane	ND	_____	cis-1,3-Dichloropropene *	ND
_____	Methylene Chloride	ND	_____	2-Chloroethylvinyl Ether	ND
_____	Trichlorofluoromethane	ND	_____	Bromoform	ND
_____	1,1-Dichloroethene	ND	_____	1,1,2,2-Tetrachloroethane #	ND
_____	1,1-Dichloroethane	ND	_____	Tetrachloroethylene #	ND
_____	trans-1,2-Dichloroethene	ND	_____	Chlorobenzene	ND
_____	Chloroform	ND	_____	1,3-Dichlorobenzene	ND
_____	1,2-Dichloroethane	ND	_____	1,2-Dichlorobenzene	ND
_____	1,1,1-Trichloroethane	ND	_____	1,4-Dichlorobenzene	ND
_____	Carbon Tetrachloride	ND			
_____	Bromodichloromethane	ND			
_____	1,2-Dichloropropane	ND			
_____	trans-1,3-Dichloropropene	ND			

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RECEIVED: 08/07/84

Analytical Serv

Results by Sample

LAB # 84-08-068

Continued From Above

SAMPLE ID RB-11-2, 130-140

FRACTION 02C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/06/84

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/L unless otherwise specified.

ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).

*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.

#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

CORPORATION

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RECEIVED: 08/07/84

Analytical Serv

REPORT

LAB # 84-08-068

Results by Sample

SAMPLE ID RB-11-3

SAMPLE # 03 FRACTIONS: A,B,C,D

Date & Time Collected 08/06/84

Category

CA E 20 CL IC 18 CO3 A 7.5 HCO3 A 101 MG E 17
ug/ml mg/L ug/ml mg/L as CaCO3 ug/ml

NA E 19 SO4 IC 5
ug/ml mg/L

PAGE 9

RECEIVED: 08/07/84

Analytical Serv

REPORT

Results by Sample

LAB # 84-08-068

SAMPLE ID RB-11-3

FRACTION 03C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/06/84

Category

DATA FILE	B	DATE INJECTED	08/10/84	ANALYST	RG5	VERIFIED BY	JSG
CONC	FACTOR			INSTRUMENT	B	COMPOUNDS DETECTED	0
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT		
	Chloromethane	ND		Trichloroethene	ND		
	Bromomethane	ND		Dibromochloromethane	*	ND	
	Vinyl Chloride	ND		1,1,2-Trichloroethane	*	ND	
	Chloroethane	ND		cis-1,3-Dichloropropene	*	ND	
	Methylene Chloride	ND		2-Chloroethylvinyl Ether		ND	
	Trichlorofluoromethane	ND		Bromoform		ND	
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	#	ND	
	1,1-Dichloroethane	ND		Tetrachloroethylene	#	ND	
	trans-1,2-Dichloroethene	ND		Chlorobenzene		ND	
	Chloroform	ND		1,3-Dichlorobenzene		ND	
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene		ND	
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene		ND	
	Carbon Tetrachloride	ND					
	Bromodichloromethane	ND					
	1,2-Dichloropropane	ND					
	trans-1,3-Dichloropropene	ND					

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Analytical Serv

REPORT

Results by Sample

LAB # 84-08-068

Continued From Above

SAMPLE ID RB-11-3

FRACTION 03C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/06/84

Category

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram

All results reported in ug/L unless otherwise specified.

ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).

<Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.

#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

PAGE 1

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Analytical Serv

REPORT

LAB # 84-08-047

08/21/84 12:25:50

REPORT Radian
TO B1 4
Austin
or Sacramento
ATTEN Wayne Pearce
CLIENT MCCLELLAN AFB
COMPANY McClellan AFB
FACILITY
SAMPLES 3

PREPARED Radian Analytical Services
BY 8501 MoPac Blvd.
P.O. Box 9948
Austin, Texas 78766
ATTEN
PHONE (512) 454-4797

Lance Newman
CERTIFIED BY

CONTACT CONDOVER

WORK ID Recon Boring
TAKEN 8/3/84, D. Rickmann
TRANS hand carried
TYPE H2O
P O # 212-027-16
INVOICE under separate cover

SAMPLE IDENTIFICATION

01 RB-12-1. 89'
02 RB-12-2. 135-140
03 RB-12-3. 170-180

Analytical Serv TEST CODES and NAMES used on this report

CA E	Calcium, ICPEs
CL IC	Chloride IC
CO3 A	Carbonate
FE F	Iron, ICPEs
GC 601	EPA Method 601/GC
HCO3 A	Bicarbonate
MG E	Magnesium, ICPEs
NA E	Sodium, ICPEs
SO4 IC	Sulfate IC

AD-A156 283

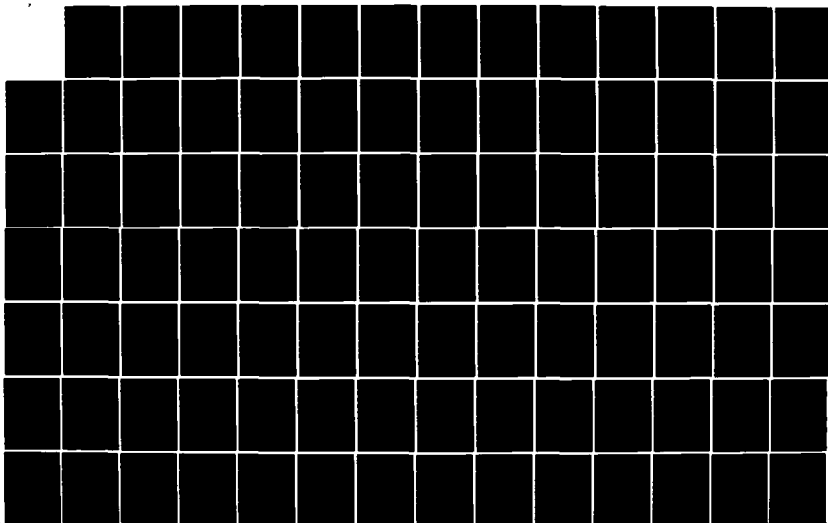
INSTALLATION RESTORATION PROGRAM PHASE II (STAGE 2-1)
VOLUME 2(U) RADIAN CORP AUSTIN TX R W BAUER MAY 85
F33615-83-D-4001

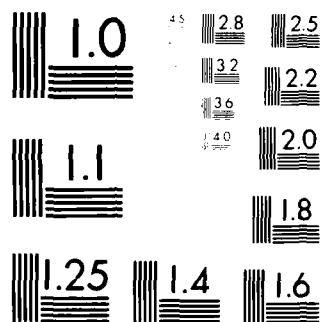
08/10

UNCLASSIFIED

F/G 13/2

NL





MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

CORPORATION

LAB # 84-08-047

Analytical Serv REPORT

PAGE 2

Results by Sample

RECEIVED: 08/06/84

SAMPLE ID RB-12-1, 89' SAMPLE # 01 FRACTIONS: A, B, C, D
Date & Time Collected 08/03/84 Category
CA E 26 CL IC 24 CO3 A 11 FE E 76 MG E 20
ug/ml mg/L mg/L as CaCO3 ug/ml mg/L as CaCO3 ug/ml
NA E 27 SO4 IC 8
ug/ml mg/L

PAGE 3

RECEIVED: 08/06/84

Analytical Serv

Results by Sample

REPORT

LAB # 84-08-047

SAMPLE ID RB-12-1, 89'

FRACTION 01C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/03/84

Category

DATA FILE _____
CONC. FACTOR _____

A

DATE INJECTED 08/10/84

ANALYST _____
INSTRUMENT _____

MCL

VERIFIED BY JSJ
COMPOUNDS DETECTED 5

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
—	Chloromethane	ND	5	Trichloroethene	0.7
—	Bromomethane	ND	—	Dibromochloromethane *	ND
—	Vinyl Chloride	ND	—	1,1,2-Trichloroethane *	ND
—	Chloroethane	ND	—	cis-1,3-Dichloropropene *	ND
—	Methylene Chloride	ND	—	2-Chloroethylvinyl Ether	ND
—	Trichlorofluoromethane	ND	—	Bromoform	ND
—	1,1-Dichloroethene	ND	—	1,1,2,2-Tetrachloroethane #	ND
1	1,1-Dichloroethane	1.2	—	Tetrachloroethylene #	ND
2	trans-1,2-Dichloroethene	1.3	—	Chlorobenzene	ND
3	Chloroform	0.1	—	1,3-Dichlorobenzene	ND
4	1,2-Dichloroethane	0.1	—	1,2-Dichlorobenzene	ND
—	1,1,1-Trichloroethane	ND	—	1,4-Dichlorobenzene	ND
—	Carbon Tetrachloride	ND			
—	Bromodichloromethane	ND			
—	1,2-Dichloropropane	ND			
—	trans-1,3-Dichloropropene	ND			

COMPUTATION

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RECEIVED: 08/06/84

Analytical Serv

REPORT

Results by Sample

LAB # 84-08-047

Continued From Above

SAMPLE ID RB-12-1, 89'

FRACTION D1C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/03/84

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/L unless otherwise specified.

ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).

*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.

#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

CORPORATION

PAGE 5
 RECEIVED: 08/06/84
 Analytical Serv
 Results by Sample
 REPORT
 LAB # 84-08-047

SAMPLE ID RB-12-2, 135-140

SAMPLE # 02 FRACTIONS: A,B,C,D

Date & Time Collected 08/03/84

Category

CA E 25 CL IC 22 CD3 A 13 FE E 97 MG E 22
 ug/ml mg/L mg/L as CaCO3 ug/ml mg/L as CaCO3 ug/ml

NA E 25 SD4 IC 7
 ug/ml mg/L

PAGE 6

RECEIVED: 08/06/84

Analytical Serv

Results by Sample

REPORT

LAB # 84-08-047

SAMPLE ID RB-12-2, 135-140

FRACTION 02C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/03/84

Category

DATA FILE	B	DATE INJECTED	08/10/84	ANALYST	MCL	VERIFIED BY	JSG
CONC. FACTOR				INSTRUMENT	B	COMPOUNDS DETECTED	2
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT		
	Chloromethane	ND		Trichloroethene	ND		
	Bromomethane	ND		Dibromochloromethane *	ND		
	Vinyl Chloride	ND		1,1,2-Trichloroethane *	ND		
	Chloroethane	ND		cis-1,3-Dichloropropene *	ND		
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND		
	Trichlorofluoromethane	ND		Bromoform	ND		
1	1,1-Dichloroethene	0.1		1,1,2,2-Tetrachloroethane #	ND		
2	1,1-Dichloroethane	0.2		Tetrachloroethylene #	ND		
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND		
	Chloroform	ND		1,3-Dichlorobenzene	ND		
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND		
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND		
	Carbon Tetrachloride	ND					
	Bromodichloromethane	ND					
	1,2-Dichloropropane	ND					
	trans-1,3-Dichloropropene	ND					

COMPORATION

PAGE 7
 RECEIVED: 08/06/84
 Analytical Serv
 Results by Sample
 REPORT
 LAB # 84-08-047
 Continued From Above
 SAMPLE ID RB-12-2, 135-140
 FRACTION 02C TEST CODE GC 601 NAME EPA Method 601/GC
 Date & Time Collected 08/03/84 Category _____

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
 All results reported in ug/L unless otherwise specified.
 ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
 *Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
 #1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

CORPORATION

PAGE 8

RECEIVED: 08/06/84

Analytical Serv

REPORT

LAB # 84-08-047

Results by Sample

SAMPLE ID RB-12-3, 170-180

SAMPLE # 03 FRACTIONS: A,B,C,D

Date & Time Collected 08/03/84

Category

CA E	22	CL IC	22	CO3 A	<1	FE E	1.3	HCO3 A	122	MG E	16
	ug/ml		mg/L		mg/L as CaCO3		ug/ml		mg/L as CaCO3		ug/ml

NA E	25	SO4 IC	7
	ug/ml		mg/L

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Analytical Serv

REPORT

Results by Sample

LAB # 84-08-047

SAMPLE ID RB-12-3, 170-180

FRACTION 03C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/03/84

Category

DATA FILE A DATE INJECTED 08/10/84 ANALYST RGS VERIFIED BY JSG
CONC. FACTOR INSTRUMENT A COMPOUNDS DETECTED 3

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
—	Chloromethane	ND	3	Trichloroethene	0.2
—	Bromomethane	ND	—	Dibromochloromethane *	ND
—	Vinyl Chloride	ND	—	1,1,2-Trichloroethane *	ND
—	Chloroethane	ND	—	cis-1,3-Dichloropropene *	ND
—	Methylene Chloride	ND	—	2-Chloroethylvinyl Ether	ND
—	Trichlorofluoromethane	ND	—	Bromoform	ND
—	1,1-Dichloroethene	ND	—	1,1,2,2-Tetrachloroethane #	ND
1	1,1-Dichloroethane	0.3	—	Tetrachloroethylene #	ND
2	trans-1,2-Dichloroethene	0.2	—	Chlorobenzene	ND
—	Chloroform	ND	—	1,3-Dichlorobenzene	ND
—	1,2-Dichloroethane	ND	—	1,2-Dichlorobenzene	ND
—	1,1,1-Trichloroethane	ND	—	1,4-Dichlorobenzene	ND
—	Carbon Tetrachloride	ND			
—	Bromodichloromethane	ND			
—	1,2-Dichloropropane	ND			
—	trans-1,3-Dichloropropene	ND			

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 RECEIVED: 08/06/84
 SAMPLE ID RB-12-3, 170-180
 Analytical Serv
 Results by Sample
 REPORT
 LAB # 84-08-047
 Continued From Above
 FRACTION 03C TEST CODE GC 601 NAME EPA Method 601/GC
 Date & Time Collected 08/03/84 Category _____

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
 All results reported in ug/L unless otherwise specified.
 ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
 *Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
 #1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

CORPORATION

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Analytical Serv

REPORT

LAB # 84-08-047

RECEIVED: 08/06/84

NonReported Work

FRACTION AND TEST CODES FOR WORK NOT REPORTED ELSEWHERE

01D : DUP601
02D : DUP601
03D : DUP601

ERADIAN

CORPORATION

PAGE 1

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Analytical Serv

REPORT

LAB # 84-08-180

06/30/84 16:26:56

REPORT Radian
TO BL 4

Austin

or Sacramento
Wayne Pearce

CLIENT MCCLELLAN AF
COMPANY McClellan AFB
FACILITY

SAMPLES 4

PREP RED Radian Analytical Services
BY 8501 MoPac Blvd.

P.O. Box 9948

Austin, Texas 78766

ATTN

PHONE (512) 454-4797

CONTACT CONOVER

CERTIFIED BY

Louise Newman

WORK ID Reconnaissance Boring

TAKEN 8/16/84

TRANS hand

TYPE H2O

P.O. # 212-027-16

INVOICE under separate cover

SAMPLE IDENTIFICATION

01 RB-13-1, 93-100
02 RB-13-2, 115-120
03 RB-13-3, 135-140
04 RB-13-4, 195-200

Analytical Serv TEST CODES and NAMES used on this report

CA E Calcium, ICPEs
CL IC Chloride IC
CO3 A Carbonate
FE E Iron, ICPEs
GC 601 EPA Method 601/GC
HC03 A Bicarbonate
Mg E Magnesium, ICPEs
NA E Sodium, ICPEs
SO4 IC Sulfate IC

TRADIAN CORPORATION

PAGE 2
RECEIVED: 08/17/84

Analytical Serv
Results by Sample

REPORT
LAB # 84-08-180

SAMPLE ID RB-13-1, 95-100		SAMPLE # 01		FRACTIONS: A, B, C, D	
Date & Time Collected 08/16/84		Category			
CA E	24 ug/ml	CL IC	29 mg/L	CO3 A	2.0 mg/ml
				FE E	133 mg E
					17 ug/ml
NA E	25 ug/ml	S04 IC	7 mg/L		

PAGE 3

RECEIVED: 08/17/84

Analytical Serv

Results by Sample

REPORT

LAB # 84-08-180

SAMPLE ID RB-13-1, 95-100

FRACTION 01C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/16/84

Category

DATA FILE _____ B DATE INJECTED 08/23/84 ANALYST _____ MCL _____ VERIFIED BY JSQ
CONC. FACTOR _____ INSTRUMENT _____ B COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
—	Chloromethane	ND	—	Trichloroethene	ND
—	Bromomethane	ND	—	Dibromochloromethane *	ND
—	Vinyl Chloride	ND	—	1,1,2-Trichloroethane *	ND
—	Chloroethane	ND	—	cis-1,3-Dichloropropene *	ND
—	Methylene Chloride	ND	—	2-Chloroethylvinyl Ether	ND
—	Trichlorofluoromethane	ND	—	Bromoform	ND
—	1,1-Dichloroethene	ND	—	1,1,2,2-Tetrachloroethane #	ND
—	1,1-Dichloroethane	ND	—	Tetrachloroethylene #	ND
—	trans-1,2-Dichloroethene	ND	—	Chlorobenzene	ND
—	Chloroform	ND	—	1,3-Dichlorobenzene	ND
—	1,2-Dichloroethane	ND	—	1,2-Dichlorobenzene	ND
—	1,1,1-Trichloroethane	ND	—	1,4-Dichlorobenzene	ND
—	Carbon Tetrachloride	ND			
—	Bromodichloromethane	ND			
—	1,2-Dichloropropane	ND			
—	trans-1,3-Dichloropropene	ND			

LEADIAN
CORPORATION

PAGE 4

RECEIVED: 08/17/84

Analytical Serv

Results by Sample

REPORT

LAB # 84-08-180
Continued From Above

SAMPLE ID RB-13-1, 95-100

FRACTION Q1C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/16/84 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/L unless otherwise specified.

ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).

*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

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RECEIVED: 08/17/84

Analytical Serv

REPORT

LAB # 84-08-180

Results by Sample

SAMPLE ID RB-13-2, 115-120

SAMPLE # 02 FRACTIONS: A,B,C,D

Date & Time Collected 08/16/84

Category

CA E 20 CL IC ug/ml

23 CO3 A mg/L

6.1 FE E ug/ml

98 HCO3 A mg/L as CaCO3

98 MG E

14 ug/ml

NA E 22 SO4 IC ug/ml

8 mg/L

PAGE 6
RECEIVED: 08/17/84

Analytical Serv
Results by Sample

REPORT

LAB # 84-08-180

SAMPLE ID RB-13-2, 115-120

FRACTION Q2C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/16/84

Category

DATA FILE _____
CONC. FACTOR _____

DATE INJECTED 08/23/84

ANALYST _____
INSTRUMENT _____

VERIFIED BY JSQ
COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
—	Chloromethane	ND	—	Trichloroethane	ND
—	Bromomethane	ND	—	Dibromochloromethane *	ND
—	Vinyl Chloride	ND	—	1,1,2-Trichloroethane *	ND
—	Chloroethane	ND	—	cis-1,3-Dichloropropene *	ND
—	Methylene Chloride	ND	—	2-Chloroethylvinyl Ether	ND
—	Trichlorofluoromethane	ND	—	Bromoform	ND
—	1,1-Dichloroethane	ND	—	1,1,2,2-Tetrachloroethane #	ND
—	1,1-Dichloroethane	ND	—	Tetrachloroethylene #	ND
—	trans-1,2-Dichloroethane	ND	—	Chlorobenzene	ND
—	Chloroform	ND	—	1,3-Dichlorobenzene	ND
—	1,2-Dichloroethane	ND	—	1,2-Dichlorobenzene	ND
—	1,1,1-Trichloroethane	ND	—	1,4-Dichlorobenzene	ND
—	Carbon Tetrachloride	ND			
—	Bromodichloromethane	ND			
—	1,2-Dichloropropane	ND			
—	trans-1,3-Dichloropropene	ND			

RADIAN
CORPORATION

PAGE 7

RECEIVED: 08/17/84

Analytical Serv

Results by Sample

LAB # 84-08-180

Continued From Above

SAMPLE ID RB-13-2, 115-120

FRACTION Q2C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/16/84

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/L unless otherwise specified.

ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).

*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

RADIAN

CORPORATION

PAGE 8

RECEIVED: 08/17/84

Analytical Serv

REPORT

Results by Sample

LAB # 84-08-180

SAMPLE ID RB-13-3, 135-140

SAMPLE # 03 FRACTIONS: A, B, C, D

Date & Time Collected 08/16/84

Category

CA E 21 ug/ml

CL IC 24 mg/L

CO3 A <1 mg/L as CaCO3

FE E 5.6 ug/ml

HCO3 A 105 mg/L as CaCO3

MG E 15 ug/ml

NA E 23 ug/ml

SO4 IC 9 mg/L

PAGE 9

RECEIVED: 08/17/84

Analytical Serv

Results by Sample

REPORT

LAB # 84-08-180

SAMPLE ID RB-13-3, 135-140

FRACTION Q3C

TEST CODE GC 601 NAME EPA Method 601/GC

Date & Time Collected 08/16/84

Category

DATA FILE _____
CONC. FACTOR _____

DATE INJECTED 08/23/84

ANALYST _____
INSTRUMENT _____

VERIFIED BY JSG
COMPOUNDS DETECTED 1

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
—	Chloromethane	ND	—	Trichloroethene	ND
—	Bromomethane	ND	—	Dibromochloromethane *	ND
—	Vinyl Chloride	ND	—	1,1,2-Trichloroethane *	ND
—	Chloroethane	ND	—	cis-1,3-Dichloropropene *	ND
—	Methylene Chloride	ND	—	2-Chloroethylvinyl Ether	ND
—	Trichlorofluoromethane	ND	—	Bromoform	ND
—	1,1-Dichloroethene	ND	—	1,1,2,2-Tetrachloroethane #	ND
—	1,1-Dichloroethane	ND	—	Tetrachloroethylene #	ND
—	trans-1,2-Dichloroethene	ND	—	Chlorobenzene	ND
—	Chloroform	ND	—	1,3-Dichlorobenzene	ND
—	1,2-Dichloroethane	ND	—	1,2-Dichlorobenzene	ND
1	1,1,1-Trichloroethane	1.3	—	1,4-Dichlorobenzene	ND
—	Carbon Tetrachloride	ND	—		
—	Bromodichloromethane	ND	—		
—	1,2-Dichloropropane	ND	—		
—	trans-1,3-Dichloropropene	ND	—		

EXADIAN
CORPORATION

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RECEIVED: 08/17/84

Analytical Serv

Results by Sample

REPORT

LAB # 84-08-180

Continued From Above

SAMPLE ID RB-13-3, 135-140

FRACTION 03C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/16/84

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/L unless otherwise specified.

ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).

*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.

#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

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RECEIVED: 08/17/84

Analytical Serv

REPORT

LAB # 84-08-180

Results by Sample

SAMPLE ID RB-13-4, 195-200

SAMPLE # 04 FRACTIONS: A, B, C, D

Date & Time Collected 08/16/84

Category

CA E 21 CL IC ug/ml

24 CO₃ A mg/L

<1 FE E mg/L as CaCO₃

26 HCO₃ A ug/ml

91 MG E mg/L as CaCO₃

12 ug/ml

NA E 29 SO₄ IC ug/ml

9 mg/L

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RECEIVED: 08/17/84

Analytical Serv

Results by Sample

REPORT

LAB # 84-08-180

SAMPLE ID RB-13-4, 195-200

FRACTION 04C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/16/84

Category

DATA FILE _____ B DATE INJECTED 08/27/84 ANALYST _____ KWK VERIFIED BY JSQ
CONC. FACTOR _____ INSTRUMENT _____ B COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Chloromethane	ND	_____	Trichloroethene	ND
_____	Bromomethane	ND	_____	Dibromochloromethane *	ND
_____	Vinyl Chloride	ND	_____	1,1,2-Trichloroethane *	ND
_____	Chloroethane	ND	_____	cis-1,3-Dichloropropene *	ND
_____	Methylene Chloride	ND	_____	2-Chloroethylvinyl Ether	ND
_____	Trichlorofluoromethane	ND	_____	Bromoform	ND
_____	1,1-Dichloroethene	ND	_____	1,1,2,2-Tetrachloroethane #	ND
_____	1,1-Dichloroethane	ND	_____	Tetrachloroethylene #	ND
_____	trans-1,2-Dichloroethene	ND	_____	Chlorobenzene	ND
_____	Chloroform	ND	_____	1,3-Dichlorobenzene	ND
_____	1,2-Dichloroethane	ND	_____	1,2-Dichlorobenzene	ND
_____	1,1,1-Trichloroethane	ND	_____	1,4-Dichlorobenzene	ND
_____	Carbon Tetrachloride	ND			
_____	Bromodichloromethane	ND			
_____	1,2-Dichloropropane	ND			
_____	trans-1,3-Dichloropropene	ND			

ERADIAN
CORPORATION

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RECEIVED: 08/17/84

Analytical Serv

REPORT

Results by Sample

LAB # 84-08-180

Continued From Above

SAMPLE ID RB-13-4, 195-200

FRACTION 04C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/16/84

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/L unless otherwise specified.

ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).

*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.

#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

RADIAN
CORPORATION

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RECEIVED: 08/17/84

Analytical Serv

NonReported Work

REPORT

LAB # 84-08-180

FRACTION AND TEST CODES FOR WORK NOT REPORTED ELSEWHERE

01D : DUP601
02D : DUP601
03D : DUP601
04D : DUP601

PAGE 1

RECEIVED: 08/28/84

Analytical Serv

REPORT

LAB # 84-08-269

09/10/84 20:23:31

REPORT Radian

TO B1 4

Austin

or Sacramento

ATTEN Wayne Pearce

CLIENT MCCLELLAN AF

COMPANY McClellan AFB

FACILITY

SAMPLES 3

WORK ID Reconnaissance Boring

TAKEN 8/27/84, WB

TRANS hand carried

TYPE H2O

P.O. # 212-027-16

INVOICE under separate cover

PREPARED Radian Analytical Services

BY 8501 MoPac Blvd.

P.O. Box 9948

Austin, Texas 78766

ATTEN

PHONE (512) 454-4797

CONTACT CONOVER

CERTIFIED BY

Loise Newman

please send one copy of the report to Toby Walters in Austin

SAMPLE IDENTIFICATION

01 RB-14-1, 80-85

02 RB-14-2, 120-130

03 RB-14-3, 180-200

Analytical Serv TEST CODES and NAMES used on this report

CA E	Calcium, ICPEs
CL IC	Chloride IC
CO3 A	Carbonate
FE E	Iron, ICPEs
GC 601	EPA Method 601/GC
HCO3 A	Bicarbonate
MG E	Magnesium, ICPEs
NA E	Sodium, ICPEs
SO4 IC	Sulfate IC

LABORATORY

PAGE 2

RECEIVED: 08/28/84

Analytical Serv

REPORT

Results by Sample

LAB # 84-08-269

SAMPLE ID RB-14-1, 80-85

SAMPLE # 01 FRACTIONS: A, B, C, D

Date & Time Collected 08/27/84

Category

CA E 20 CL IC 22 CO3 A 4.8 HCO3 A 88 MG E 16
ug/ml mg/L mg/L as CaCO3 ug/ml

NA E 18 SO4 IC 5
ug/ml mg/L

PAGE 3

RECEIVED: 08/28/84

Analytical Serv

REPORT

LAB # 84-08-269

Results by Sample

SAMPLE ID RB-14-1, 80-85

FRACTION Q1C

TEST CODE GC 601 NAME EPA Method 601/GC

Date & Time Collected 08/27/84

Category

DATA FILE	B	DATE INJECTED	08/31/84	ANALYST	KS	VERIFIED BY	JSG
CONC. FACTOR				INSTRUMENT	B	COMPOUNDS DETECTED	O
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT		
	Chloromethane	ND		Trichloroethene	ND		
	Bromomethane	ND		Dibromochloromethane	*	ND	
	Vinyl Chloride	ND		1,1,2-Trichloroethane	*	ND	
	Chloroethane	ND		cis-1,3-Dichloropropene	*	ND	
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND		
	Trichlorofluoromethane	ND		Bromoform	ND		
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	#	ND	
	1,1-Dichloroethane	ND		Tetrachloroethylene	#	ND	
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND		
	Chloroform	ND		1,3-Dichlorobenzene	ND		
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND		
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND		
	Carbon Tetrachloride	ND					
	Bromodichloromethane	ND					
	1,2-Dichloropropane	ND					
	trans-1,3-Dichloropropene	ND					

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RECEIVED: 08/28/84

Analytical Serv

REPORT

LAB # 84-08-269

Results by Sample

Continued From Above

SAMPLE ID RD-14-1, 80-85

FRACTION O1C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/27/84

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/L unless otherwise specified.

ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).

+Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.

#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

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RECEIVED: 08/28/84

Analytical Serv

REPORT

LAB # 84-08-269

Results by Sample

SAMPLE ID RB-14-2, 120-130

SAMPLE # 02 FRACTIONS: A, B, C, D

Date & Time Collected 08/27/84

Category

CA E 18 CL IC 21 CO3 A 11 FE E 88 MG E 15
ug/ml mg/L mg/L as CaCO3 ug/ml mg/L as CaCO3 ug/ml

NA E 18 SO4 IC 5
ug/ml mg/L

PAGE 6

RECEIVED: 08/28/84

Analytical Serv

REPORT

LAB # 84-08-269

Results by Sample

SAMPLE ID RB-14-2, 120-130

FRACTION 02C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/27/84

Category

DATA FILE _____
CONC. FACTOR _____

A

DATE INJECTED 08/31/84

KS

ANALYST _____
INSTRUMENT _____VERIFIED BY JSG
COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Chloromethane	ND	_____	Trichloroethene	ND
_____	Bromomethane	ND	_____	Dibromochloromethane *	ND
_____	Vinyl Chloride	ND	_____	1,1,2-Trichloroethane *	ND
_____	Chloroethane	ND	_____	cis-1,3-Dichloropropene *	ND
_____	Methylene Chloride	ND	_____	2-Chloroethylvinyl Ether	ND
_____	Trichlorofluoromethane	ND	_____	Bromoform	ND
_____	1,1-Dichloroethene	ND	_____	1,1,2,2-Tetrachloroethane #	ND
_____	1,1-Dichloroethane	ND	_____	Tetrachloroethylene #	ND
_____	trans-1,2-Dichloroethene	ND	_____	Chlorobenzene	ND
_____	Chloroform	ND	_____	1,3-Dichlorobenzene	ND
_____	1,2-Dichloroethane	ND	_____	1,2-Dichlorobenzene	ND
_____	1,1,1-Trichloroethane	ND	_____	1,4-Dichlorobenzene	ND
_____	Carbon Tetrachloride	ND			
_____	Bromodichloromethane	ND			
_____	1,2-Dichloropropane	ND			
_____	trans-1,3-Dichloropropene	ND			

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RECEIVED: 08/28/84

Analytical Serv

REPORT

Results by Sample

LAB # 84-08-269

Continued From Above

SAMPLE ID RB-14-2, 120-130

FRACTION 02C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/27/84

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/L unless otherwise specified.

ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).

*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

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RECEIVED: 08/28/84

Analytical Serv

REPORT

LAB # 84-08-269

Results by Sample

SAMPLE ID RB-14-3, 180-200

SAMPLE # 03 FRACTIONS: A,B,C,D

Date & Time Collected 08/27/84

Category

CA E 21 CL IC 21 mg/L 21 mg/L as CaCO3 14 FE E 14 mg/L as CaCO3 103 MG E 19 ug/ml

NA E 18 SO4 IC 5 mg/L

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RECEIVED: 08/28/84

Analytical Serv

REPORT

LAB # 84-08-269

Results by Sample

SAMPLE ID RB-14-3, 180-200

FRACTION Q3C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/27/84

Category

DATA FILE
CONC. FACTOR

B

DATE INJECTED 08/31/84

ANALYST
INSTRUMENT

KS

VERIFIED BY JSG
COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
—	Chloromethane	ND	—	Trichloroethene	ND
—	Bromomethane	ND	—	Dibromochloromethane *	ND
—	Vinyl Chloride	ND	—	1,1,2-Trichloroethane *	ND
—	Chloroethane	ND	—	cis-1,3-Dichloropropene *	ND
—	Methylene Chloride	ND	—	2-Chloroethylvinyl Ether	ND
—	Trichlorofluoromethane	ND	—	Bromoform	ND
—	1,1-Dichloroethene	ND	—	1,1,2,2-Tetrachloroethane #	ND
—	1,1-Dichloroethane	ND	—	Tetrachloroethylene #	ND
—	trans-1,2-Dichloroethene	ND	—	Chlorobenzene	ND
—	Chloroform	ND	—	1,3-Dichlorobenzene	ND
—	1,2-Dichloroethane	ND	—	1,2-Dichlorobenzene	ND
—	1,1,1-Trichloroethane	ND	—	1,4-Dichlorobenzene	ND
—	Carbon Tetrachloride	ND			
—	Bromodichloromethane	ND			
—	1,2-Dichloropropane	ND			
—	trans-1,3-Dichloropropene	ND			

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RECEIVED: 08/28/84

Analytical Serv

REPORT

Results by Sample

LAB # 84-08-269

Continued From Above

SAMPLE ID RB-14-3, 180-200

FRACTION 03C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/27/84

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/L unless otherwise specified.

ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).

*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.

#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

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RECEIVED: 08/28/84

Analytical Serv

REPORT

NonReported Work

LAB # 84-08-269

FRACTION AND TEST CODES FOR WORK NOT REPORTED ELSEWHERE

01D : DUP601
02D : DUP601
03D : DUP601

PAGE 1

RECEIVED: 08/22/84

Analytical Serv

REPORT

LAB # 84-08-217

09/05/84 09:28:26

REPORT Radian

TO BL 4

Austin

or Sacramento

ATTEN Wayne Pearce

CLIENT MCCLELLAN AF

COMPANY McClellan AFB

FACILITY

SAMPLES 3

WORK ID Reconnaissance Boring

TAKEN 8/21/84

TRANS hand carried

TYPE H2O

P.O. # 212-027-16

INVOICE under separate cover

PREPARED Radian Analytical Services

BY 8501 MoPac Blvd.

P.O. Box 9948

Austin, Texas 78766

ATTEN

PHONE (512) 454-4797

CONTACT CONOVER

please send one copy of the report to Toby Walters in Austin

Note: Second column confirmation performed on Split OIC.

SAMPLE IDENTIFICATION

01 RB-15-1, 115-120

02 RB-15-2, 155-160

02 RB-15-2, 155-160

03 RB-15-3, 195-200

Analytical Serv TEST CODES and NAMES used on this report

CA E	Calcium, ICPEs
CL IC	Chloride IC
CD3 A	Carbonate
FE E	Iron, ICPEs
GC 601	EPA Method 601/GC
HC03 A	Bicarbonate
MG E	Magnesium, ICPEs
NA E	Sodium, ICPEs
SO4 IC	Sulfate IC

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RECEIVED: 08/22/84

Analytical Serv

REPORT

Results by Sample

LAB # 84-08-217

SAMPLE ID RB-15-1, 115-120

SAMPLE # 01 FRACTIONS: A, B, C, D

Date & Time Collected 08/21/84

Category

CA E 42 CL IC 17 CO3 A <1 FE E 60 HCO3 A 87 MG E 39
ug/ml mg/L mg/L as CaCO3 ug/ml mg/L as CaCO3 ug/ml

NA E 28 SO4 IC 8.9
ug/ml mg/L

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RECEIVED: 08/22/84

Analytical Serv

Results by Sample

REPORT

LAB # 84-08-217

SAMPLE ID RB-15-1, 115-120

FRACTION 01C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/21/84

Category

DATA FILE _____ A _____ DATE INJECTED 08/27/84 ANALYST _____ MCL _____ VERIFIED BY JSG
CONC. FACTOR _____ INSTRUMENT _____ A _____ COMPOUNDS DETECTED 3

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Chloromethane	ND	_____	Trichloroethene	ND
_____	Bromomethane	ND	_____	Dibromochloromethane *	ND
_____	Vinyl Chloride	ND	_____	1,1,2-Trichloroethane *	ND
_____	Chloroethane	ND	_____	cis-1,3-Dichloropropene *	ND
1	Methylene Chloride	1.8	_____	2-Chloroethylvinyl Ether	ND
2	Trichlorofluoromethane	0.2	_____	Bromoform	ND
_____	1,1-Dichloroethene	ND	_____	1,1,2,2-Tetrachloroethane #	ND
_____	1,1-Dichloroethane	ND	_____	Tetrachloroethylene #	ND
_____	trans-1,2-Dichloroethene	ND	_____	Chlorobenzene	ND
_____	Chloroform	ND	_____	1,3-Dichlorobenzene	ND
_____	1,2-Dichloroethane	ND	_____	1,2-Dichlorobenzene	ND
3	1,1,1-Trichloroethane	0.5	_____	1,4-Dichlorobenzene	ND
_____	Carbon Tetrachloride	ND			
_____	Bromodichloromethane	ND			
_____	1,2-Dichloropropane	ND			
_____	trans-1,3-Dichloropropene	ND			

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RECEIVED: 08/22/84

Analytical Serv

Results by Sample

REPORT

LAB # 84-08-217

Continued From Above

SAMPLE ID RB-15-1, 115-120

FRACTION O1C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/21/84

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/L unless otherwise specified.

ND = not detected at EPA detection limit method 601. (Federal Register, 12/3/79).

*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.

#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

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RECEIVED: 08/22/84

Analytical Serv
Results by Sample

LAB # 84-08-217

SAMPLE ID RB-15-2, 155-160

SAMPLE # 02 FRACTIONS: B,C,D
Date & Time Collected 08/21/84

Category

CA E 20 FE E 13 MG E 17 NA E 18
ug/ml ug/ml ug/ml

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RECEIVED: 08/22/84

Analytical Serv

Results by Sample

REPORT

LAB # 84-08-217

SAMPLE ID RB-15-2, 155-160 *(initials)*

FRACTION 02C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/21/84

Category

DATA FILE
CONC. FACTOR

A

DATE INJECTED 08/27/84

ANALYST
INSTRUMENT

KS

VERIFIED BY JSG
COMPOUNDS DETECTED 2

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Chloromethane	ND		Trichloroethene	ND
	Bromomethane	ND		Dibromochloromethane	*
	Vinyl Chloride	ND		1,1,2-Trichloroethane	*
	Chloroethane	ND		cis-1,3-Dichloropropene	*
1	Methylene Chloride	0.5		2-Chloroethylvinyl Ether	ND
	Trichlorofluoromethane	ND		Bromoform	ND
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	*
	1,1-Dichloroethane	ND		Tetrachloroethylene	*
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND
	Chloroform	ND		1,3-Dichlorobenzene	ND
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND
2	1,1,1-Trichloroethane	0.5		1,4-Dichlorobenzene	ND
	Carbon Tetrachloride	ND			
	Bromodichloromethane	ND			
	1,2-Dichloropropane	ND			
	trans-1,3-Dichloropropene	ND			

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RECEIVED: 08/22/84

Analytical Serv

Results by Sample

REPORT

LAB # 84-08-217
Continued From Above

SAMPLE ID RB-15-2, 155-160 *cup*

FRACTION 02C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/21/84

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/L unless otherwise specified.

ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).

*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.

#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

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RECEIVED: 08/22/84

Analytical Serv

REPORT

LAB # 84-08-217

Results by Sample

SAMPLE ID RB-15-2, 155-160 SAMPLE # 02 FRACTIONS: A
Date & Time Collected 08/21/84 Category
CL_IC 8.0 CO3 A <1 HCO3 A 98 SO4 IC 1.6
mg/L mg/L as CaCO3 mg/L as CaCO3 mg/L

SAMPLE ID RB-15-3, 195-200 SAMPLE # 03 FRACTIONS: A, B, C, D
Date & Time Collected 08/21/84 Category
CA_E 21 CL_IC 16 CO3 A <1 FE_E 27 HCO3 A 88 MG_E 20
ug/ml mg/L mg/L as CaCO3 ug/ml mg/L as CaCO3 ug/ml
NA_E 21 SO4 IC 3.7
ug/ml mg/L

PAGE 10
RECEIVED: 08/22/84
SAMPLE ID RB-15-3, 195-200
Analytical Serv
Results by Sample
REPORT
LAB # 84-08-217
FRACTION 03C
TEST CODE GC 601
NAME EPA Method 601/GC
Date & Time Collected 08/21/84
Category

DATA FILE	A	DATE INJECTED	08/27/84	ANALYST	KS	VERIFIED BY	JSG
CONC. FACTOR				INSTRUMENT	A	COMPOUNDS DETECTED	0
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT		
	Chloromethane	ND		Trichloroethene	ND		
	Bromomethane	ND		Dibromochloromethane	*	ND	
	Vinyl Chloride	ND		1,1,2-Trichloroethane	*	ND	
	Chloroethane	ND		cis-1,3-Dichloropropene	*	ND	
	Methylene Chloride	ND		2-Chloroethylvinyl Ether		ND	
	Trichlorofluoromethane	ND		Bromoform		ND	
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	#	ND	
	1,1-Dichloroethane	ND		Tetrachloroethylene	#	ND	
	trans-1,2-Dichloroethene	ND		Chlorobenzene		ND	
	Chloroform	ND		1,3-Dichlorobenzene		ND	
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene		ND	
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene		ND	
	Carbon Tetrachloride	ND					
	Bromodichloromethane	ND					
	1,2-Dichloropropane	ND					
	trans-1,3-Dichloropropene	ND					

PAGE 11
RECEIVED: 08/22/84
SAMPLE ID RB-15-3, 195-200
Analytical Serv REPORT
Results by Sample
LAB # 84-08-217
Continued From Above
FRACTION 03C TEST CODE GC 601 NAME EPA Method 601/GC
Date & Time Collected 08/21/84 Category _____

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

RYAN
CORPORATION

PAGE 12

RECEIVED: 08/22/84

Analytical Serv

REPORT

NonReported Work

LAB # 84-08-217

FRACTION AND TEST CODES FOR WORK NOT REPORTED ELSEWHERE

01D : DUP601
02D : DUP601
03D : DUP601

EXAMINATION

PAGE 1

RECEIVED: 08/13/84

Analytical Serv

REPORT

09/05/84 07:27:38

LAB # 84-08-130

REPORT Radian
TO BL 4

Austin

or Sacramento

ATTEN Wayne Pearce

CLIENT MCCLELLAN AFB SAMPLES 4

COMPANY McClellan AFB

FACILITY

PREPARED Radian Analytical Services

BY 8501 MoPac Blvd.

P.O. Box 9948

Austin, Texas 78766

ATTEN

PHONE (512) 454-4797

CERTIFIED BY

CONTACT CONOVER

Steve Newmar

WORK ID Recon. Boring

TAKEN 8/10/84

TRANS hand carried

TYPE H2O

P.O. # 212-027-16

INVOICE under separate cover

please send one copy of the report to Toby Walters in Austin
Note: Second column confirmation performed on Split Q3C.

SAMPLE IDENTIFICATION

01 RB-16-1, 90-100
02 RB-16-2, 120
03 RB-16-3, 160
04 RB-16-4, 180

Analytical Serv TEST CODES and NAMES used on this report

CA E	Calcium, ICPEs
CL IC	Chloride IC
CO3 A	Carbonate
FE E	Iron, ICPEs
GC 601	EPA Method 601/GC
HC03 A	Bicarbonate
MG E	Magnesium, ICPEs
NA E	Sodium, ICPEs
SO4 IC	Sulfate IC

KRADIAN CORPORATION

PAGE 3
RECEIVED: 08/13/84

Analytical Serv
Results by Sample

LAB # 84-08-130

SAMPLE ID RB-16-1, 90-100

SAMPLE # 01 FRACTIONS: A, B, C, D

Date & Time Collected 08/10/84

Category

CA E 51 CL IC 14 CO3 A <1 FE E 70 HCO3 A 80 MG E 52
ug/ml mg/L mg/L as CaCO3 ug/ml mg/L as CaCO3 ug/ml

NA E 24 SO4 IC 9.5
ug/ml mg/L

PAGE 4

Analytical Serv

REPORT

LAB # 84-08-130

RECEIVED: 08/13/84

Results by Sample

SAMPLE ID RB-16-1, 90-100

FRACTION 01C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/10/84

Category

DATA FILE _____
CONC. FACTOR _____

DATE INJECTED 08/22/84

ANALYST _____
INSTRUMENT _____

VERIFIED BY JSG
COMPOUNDS DETECTED _____

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Chloromethane	ND	_____	Trichloroethene	ND
_____	Bromomethane	ND	_____	Dibromochloromethane *	ND
_____	Vinyl Chloride	ND	_____	1,1,2-Trichloroethane *	ND
_____	Chloroethane	ND	_____	cis-1,3-Dichloropropene *	ND
_____	Methylene Chloride	ND	_____	2-Chloroethylvinyl Ether	ND
_____	Trichlorofluoromethane	ND	_____	Bromoform	ND
_____	1,1-Dichloroethene	ND	_____	1,1,2,2-Tetrachloroethane #	ND
_____	1,1-Dichloroethane	ND	_____	Tetrachloroethylene #	ND
_____	trans-1,2-Dichloroethene	ND	_____	Chlorobenzene	ND
_____	Chloroform	ND	_____	1,3-Dichlorobenzene	ND
_____	1,2-Dichloroethane	ND	_____	1,2-Dichlorobenzene	ND
_____	1,1,1-Trichloroethane	ND	_____	1,4-Dichlorobenzene	ND
_____	Carbon Tetrachloride	ND			
_____	Bromodichloromethane	ND			
_____	1,2-Dichloropropane	ND			
_____	trans-1,3-Dichloropropene	ND			

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RECEIVED: 08/13/84

Analytical Serv

Results by Sample

REPORT

LAB # 84-08-130

Continued From Above

SAMPLE ID RB-16-1, 90-100

FRACTION 01C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/10/84

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/L unless otherwise specified.

ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).

*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.

#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

PAGE 6

RECEIVED: 08/13/84

Analytical Serv

REPORT

Results by Sample

LAB # 84-08-130

SAMPLE ID RB-16-2, 120

SAMPLE # 02 FRACTIONS: A, B, C, D, E

Date & Time Collected 08/10/84

Category

CA E 18 CL IC 14 CO3 A <1 FE E 3.7 HCO3 A 80 MG E 11
ug/ml mg/L mg/L as CaCO3 ug/ml mg/L as CaCO3 ug/ml

NA E 26 SO4 IC 5
ug/ml mg/L

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RECEIVED: 08/13/84

Analytical Serv
Results by Sample

LAB # 84-08-130

SAMPLE ID RB-16-2, 120

FRACTION 02C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/10/84

Category

DATA FILE _____
CONC. FACTOR _____

DATE INJECTED 08/22/84

ANALYST _____
INSTRUMENT _____

VERIFIED BY JSC
COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Chloromethane	ND	_____	Trichloroethene	ND
_____	Bromomethane	ND	_____	Dibromochloromethane *	ND
_____	Vinyl Chloride	ND	_____	1,1,2-Trichloroethane *	ND
_____	Chloroethane	ND	_____	cis-1,3-Dichloropropene *	ND
_____	Methylene Chloride	ND	_____	2-Chloroethylvinyl Ether	ND
_____	Trichlorofluoromethane	ND	_____	Bromoform	ND
_____	1,1-Dichloroethene	ND	_____	1,1,2,2-Tetrachloroethane #	ND
_____	1,1-Dichloroethane	ND	_____	Tetrachloroethylene #	ND
_____	trans-1,2-Dichloroethene	ND	_____	Chlorobenzene	ND
_____	Chloroform	ND	_____	1,3-Dichlorobenzene	ND
_____	1,2-Dichloroethane	ND	_____	1,2-Dichlorobenzene	ND
_____	1,1,1-Trichloroethane	ND	_____	1,4-Dichlorobenzene	ND
_____	Carbon Tetrachloride	ND			
_____	Bromodichloromethane	ND			
_____	1,2-Dichloropropane	ND			
_____	trans-1,3-Dichloropropene	ND			

EXADIAN
CONSTRUCTION

PAGE 8

RECEIVED: 08/13/84

Analytical Serv

Results by Sample

REPORT

LAB # 84-08-130

Continued From Above

SAMPLE ID RB-16-2, 120

FRACTION 02C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/10/84

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/L unless otherwise specified.

ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).

*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.

#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

CRADIAN
CORPORATION

PAGE 9
RECEIVED: 08/13/84

Analytical Serv
Results by Sample

LAB # 84-08-130

SAMPLE ID RB-16-3, 160		SAMPLE # 03		FRACTIONS: A, B, C, D	
Date & Time Collected 08/10/84		Category			
CA E	130 ug/ml	CL IC	13 mg/L	CO3 A	54 mg/L as CaCO3
NA E	25 ug/ml	S04 IC	5 mg/L	HCO3 A	89 mg/L as CaCO3
				FE E	130 ug/ml

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RECEIVED: 08/13/84

Analytical Serv

Results by Sample

REPORT

LAB # 84-08-130

SAMPLE ID RB-16-3, 160

FRACTION 03C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/10/84

Category

DATA FILE _____ B DATE INJECTED 08/22/84 ANALYST _____ KWK VERIFIED BY JSG
CONC. FACTOR _____ INSTRUMENT _____ B COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Chloromethane	ND	_____	Trichloroethene	ND
_____	Bromomethane	ND	_____	Dibromochloromethane *	ND
_____	Vinyl Chloride	ND	_____	1,1,2-Trichloroethane *	ND
_____	Chloroethane	ND	_____	cis-1,3-Dichloropropene *	ND
_____	Methylene Chloride	ND	_____	2-Chloroethylvinyl Ether	ND
_____	Trichlorofluoromethane	ND	_____	Bromoform	ND
_____	1,1-Dichloroethene	ND	_____	1,1,2,2-Tetrachloroethane #	ND
_____	1,1-Dichloroethane	ND	_____	Tetrachloroethylene #	ND
_____	trans-1,2-Dichloroethene	ND	_____	Chlorobenzene	ND
_____	Chloroform	ND	_____	1,3-Dichlorobenzene	ND
_____	1,2-Dichloroethane	ND	_____	1,2-Dichlorobenzene	ND
_____	1,1,1-Trichloroethane	ND	_____	1,4-Dichlorobenzene	ND
_____	Carbon Tetrachloride	ND			
_____	Bromodichloromethane	ND			
_____	1,2-Dichloropropene	ND			
_____	trans-1,3-Dichloropropene	ND			

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RECEIVED: 08/13/84

Analytical Serv

Results by Sample

REPORT

LAB # 84-08-130
Continued From Above

SAMPLE ID RB-16-3, 160

FRACTION 03C TEST CODE GC 601 NAME EPA Method 601/GC

Date & Time Collected 08/10/84

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/L unless otherwise specified.

ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).

*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

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RECEIVED: 08/13/84

Analytical Serv

REPORT

LAB # 84-08-130

Results by Sample

SAMPLE ID RB-16-4, 180		SAMPLE # 04		FRACTIONS: A, B, C, D	
Date & Time Collected 08/10/84		Category			
CA E	21 ug/ml	CL IC	15 mg/L	CO3 A	15 mg/L as CaCO3
NA E	18 ug/ml	S04 IC	5 mg/L	HCO3 A	93 mg/L as CaCO3
				FE E	8.9 ug/ml
					15 ug/ml

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RECEIVED: 08/13/84

Analytical Serv
Results by Sample

REPORT

LAB # 84-08-130

SAMPLE ID RB-16-4, 180

FRACTION 04C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/10/84

Category

DATA FILE _____ B DATE INJECTED 08/22/84 ANALYST _____ KWK VERIFIED BY JSG
CONC. FACTOR _____ INSTRUMENT _____ B COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
—	Chloromethane	ND	—	Trichloroethene	ND
—	Bromomethane	ND	—	Dibromochloromethane *	ND
—	Vinyl Chloride	ND	—	1,1,2-Trichloroethane *	ND
—	Chloroethane	ND	—	cis-1,3-Dichloropropene *	ND
—	Methylene Chloride	ND	—	2-Chloroethylvinyl Ether	ND
—	Trichlorofluoromethane	ND	—	Bromoform	ND
—	1,1-Dichloroethene	ND	—	1,1,2,2-Tetrachloroethane #	ND
—	1,1-Dichloroethane	ND	—	Tetrachloroethylene #	ND
—	trans-1,2-Dichloroethene	ND	—	Chlorobenzene	ND
—	Chloroform	ND	—	1,3-Dichlorobenzene	ND
—	1,2-Dichloroethane	ND	—	1,2-Dichlorobenzene	ND
—	1,1,1-Trichloroethane	ND	—	1,4-Dichlorobenzene	ND
—	Carbon Tetrachloride	ND			
—	Bromodichloromethane	ND			
—	1,2-Dichloropropane	ND			
—	trans-1,3-Dichloropropene	ND			

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RECEIVED: 08/13/84

Analytical Serv

Results by Sample

REPORT

LAB # 84-08-130

Continued From Above

SAMPLE ID RB-16-4, 180

FRACTION 04C

TEST CODE GC 601 NAME EPA Method 601/GC

Date & Time Collected 08/10/84

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/L unless otherwise specified.

ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).

*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

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RECEIVED: 08/13/84

Analytical Serv

REPORT

NonReported Work

LAB # 84-08-130

FRACTION AND TEST CODES FOR WORK NOT REPORTED ELSEWHERE

01D	:	DUP601		
02D	:	DUP601	02E	: LOG_IN
03D	:	DUP601		
04D	:	DUP601		

CORPORATION

PAGE 1

RECEIVED: 08/30/84

Analytical Serv

REPORT

LAB # 84-08-288

09/26/84 11:53:35

REPORT Radian
TO B1 4
Austin
or Sacramento
ATTEN Wayne Pearce
CLIENT MCCLELLAN AF
COMPANY McClellan AFB
FACILITY

SAMPLES 3

PREPARED Radian Analytical Services
BY 8501 MoPac Blvd.
P.O. Box 9948
Austin, Texas 78766
ATTEN
PHONE (512) 454-4797

CONTACT CONOVER

[Signature]
CERTIFIED BY

please send one copy of the report to Toby Walters in Austin

WORK ID Reconnaissance Boring
TAKEN 8/29/84
TRANS hand carried
TYPE H2O
P.O. # 212-027-16
INVOICE under separate cover

* Indicates a value less than 5 times the detection limit
which must be interpreted accordingly.

@ Indicates that spike recovery for this analysis on the
specific matrix was not within acceptable limits indicating
an interferent present.

SAMPLE IDENTIFICATION

01 RB-17-1, 115-120
02 RB-17-2, 135-140
03 RB-17-3, 180-190

Analytical Serv TEST CODES and NAMES used on this report

CA E Calcium, ICPE
CL IC Chloride IC
CO3 A Carbonate
FE E Iron, ICPE
GC 601 EPA Method 601/GC
HCO3 A Bicarbonate
MG E Magnesium, ICPE
NA E Sodium, ICPE
SO4 IC Sulfate IC

CORPORATION

PAGE 2

RECEIVED: 08/30/84

Analytical Serv

REPORT

LAB # 84-08-288

RESULTS BY TEST

RB-17-1

RB-17-2

RB-17-3

TEST CODE	Sample 01	Sample 02	Sample 03
default units	(entered units)	(entered units)	(entered units)
CA E	8.1	8.6	8.3
ug/ml			
CL IC	16	16	20
mg/L			
CO3 A	<1	<1	<1
mg/L as CaCO3			
FE E	2.1	2.3	2.6
ug/ml			
HCO3 A	112	96	95
mg/L as CaCO3			
MG E	6.3	6.1	6.1
ug/ml			
NA E	7.7	7.6	7.4
ug/ml			
SO4 IC	5	9.2	6.7
mg/L			

PAGE 3

RECEIVED: 08/30/84

Analytical Serv

REPORT

LAB # 84-08-288

Results by Sample

SAMPLE ID RB-17-1, 115-120

FRACTION O1C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/29/84

Category

DATA FILE _____
CONC. FACTOR _____

DATE INJECTED 09/24/84

ANALYST _____
INSTRUMENT _____MCL _____
A _____VERIFIED BY JSG
COMPOUNDS DETECTED 1

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Chloromethane	ND	_____	Trichloroethene	ND
_____	Bromomethane	ND	_____	Dibromochloromethane *	ND
_____	Vinyl Chloride	ND	_____	1,1,2-Trichloroethane *	ND
_____	Chloroethane	ND	_____	cis-1,3-Dichloropropene *	ND
1	Methylene Chloride	1.7	_____	2-Chloroethylvinyl Ether	ND
_____	Trichlorofluoromethane	ND	_____	Bromoform	ND
_____	1,1-Dichloroethene	ND	_____	1,1,2,2-Tetrachloroethane #	ND
_____	1,1-Dichloroethane	ND	_____	Tetrachloroethylene #	ND
_____	trans-1,2-Dichloroethene	ND	_____	Chlorobenzene	ND
_____	Chloroform	ND	_____	1,3-Dichlorobenzene	ND
_____	1,2-Dichloroethane	ND	_____	1,2-Dichlorobenzene	ND
_____	1,1,1-Trichloroethane	ND	_____	1,4-Dichlorobenzene	ND
_____	Carbon Tetrachloride	ND			
_____	Bromodichloromethane	ND			
_____	1,2-Dichloropropane	ND			
_____	trans-1,3-Dichloropropene	ND			

CORPORATION

PAGE 4

RECEIVED: 08/30/84

Analytical Serv

REPORT

LAB # 84-08-288

Results by Sample

Continued From Above

SAMPLE ID RB-17-1, 115-120

FRACTION O1C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/29/84

Category

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.

All results reported in ug/L unless otherwise specified.

ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).

*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.

#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

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Analytical Serv

REPORT

LAB # 84-08-288

RECEIVED: 08/30/84

Results by Sample

SAMPLE ID RB-17-2, 135-140

FRACTION 02C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/29/84

Category

DATA FILE _____
CONC. FACTOR _____

DATE INJECTED 09/24/84

ANALYST _____
INSTRUMENT _____VERIFIED BY JSG
COMPOUNDS DETECTED 1

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Chloromethane	ND	_____	Trichloroethene	ND
_____	Bromomethane	ND	_____	Dibromochloromethane *	ND
_____	Vinyl Chloride	ND	_____	1, 1, 2-Trichloroethane *	ND
_____	Chloroethane	ND	_____	cis-1, 3-Dichloropropene *	ND
1	Methylene Chloride	1.1	_____	2-Chloroethylvinyl Ether	ND
_____	Trichlorofluoromethane	ND	_____	Bromoform	ND
_____	1, 1-Dichloroethene	ND	_____	1, 1, 2, 2-Tetrachloroethane #	ND
_____	1, 1-Dichloroethane	ND	_____	Tetrachloroethylene #	ND
_____	trans-1, 2-Dichloroethene	ND	_____	Chlorobenzene	ND
_____	Chloroform	ND	_____	1, 3-Dichlorobenzene	ND
_____	1, 2-Dichloroethane	ND	_____	1, 2-Dichlorobenzene	ND
_____	1, 1, 1-Trichloroethane	ND	_____	1, 4-Dichlorobenzene	ND
_____	Carbon Tetrachloride	ND			
_____	Bromodichloromethane	ND			
_____	1, 2-Dichloropropane	ND			
_____	trans-1, 3-Dichloropropene	ND			

CORPORATION

PAGE 6

RECEIVED: 08/30/84

Analytical Serv

REPORT

LAB # 84-08-288

Results by Sample

Continued From Above

SAMPLE ID RB-17-2, 135-140

FRACTION 02C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/29/84

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

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ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).

*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

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RECEIVED: 08/30/84

Analytical Serv

REPORT

LAB # 84-08-288

Results by Sample

SAMPLE ID RB-17-3, 180-190

FRACTION 03C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/30/84

Category

DATA FILE	B	DATE INJECTED	09/05/84	ANALYST	KS	VERIFIED BY	JSG
CONC. FACTOR				INSTRUMENT	b	COMPOUNDS DETECTED	Q
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT		
	Chloromethane	ND		Trichloroethene	ND		
	Bromomethane	ND		Dibromochloromethane *	ND		
	Vinyl Chloride	ND		1,1,2-Trichloroethane *	ND		
	Chloroethane	ND		cis-1,3-Dichloropropene *	ND		
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND		
	Trichlorofluoromethane	ND		Bromoform	ND		
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane #	ND		
	1,1-Dichloroethane	ND		Tetrachloroethylene #	ND		
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND		
	Chloroform	ND		1,3-Dichlorobenzene	ND		
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND		
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND		
	Carbon Tetrachloride	ND					
	Bromodichloromethane	ND					
	1,2-Dichloropropane	ND					
	trans-1,3-Dichloropropene	ND					

CORPORATION

PAGE 8

RECEIVED: 08/30/84

Analytical Serv

REPORT

Results by Sample

LAB # 84-08-288

Continued From Above

SAMPLE ID RB-17-3, 180-190

FRACTION 03C TEST CODE GC 601 NAME EPA Method 601/GC

Date & Time Collected 08/30/84

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/L unless otherwise specified.

ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).

*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

CORPORATION

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Analytical Serv

REPORT

LAB # 84-08-288

RECEIVED: 08/30/84

NonReported Work

FRACTION AND TEST CODES FOR WORK NOT REPORTED ELSEWHERE

01D : DUP601
02D : DUP601
03D : DUP601

CORPORATION

PAGE 1

RECEIVED: 09/04/84

Analytical Serv

REPORT

LAB # 84-09-011

09/26/84 10:21:42

REPORT Radian

TO BL 4

Austin

or Sacramento

ATTEN Wayne Pearce

CLIENT MCCLELLAN AFB

COMPANY McClellan AFB

FACILITY

SAMPLES 1

WORK ID Reconnaissance Boring

TAKEN 8/31/84

TRANS hand carried

TYPE H2O

P.D. # 212-027-16

INVOICE under separate cover

PREPARED Radian Analytical Services

BY 8501 MoPac Blvd.

P.O. Box 9948

Austin, Texas 78766

ATTEN

PHONE (512) 454-4797

CONTACT CONOVER

CERTIFIED BY

please send one copy of the report to Toby Walters in Austin
2nd column confirmation performed on EPA 601.

* Indicates a value less than 5 times the detection limit
which must be interpreted accordingly.

@ Indicates that spike recovery for this analysis on the
specific matrix was not within acceptable limits indicating
an interferent present.

SAMPLE IDENTIFICATION

01 R3-1B-1, 120-140

Analytical Serv TEST CODES and NAMES used on this report

CA E	Calcium, ICPES
CL IC	Chloride IC
CO3 A	Carbonate
FE E	Iron, ICPES
GC 601	EPA Method 601/GC
HCO3 A	Bicarbonate
MG E	Magnesium, ICPES
NA E	Sodium, ICPES
SO4 IC	Sulfate IC

CORPORATION

PAGE 2

RECEIVED: 09/04/84

Analytical Serv

REPORT

LAB # 84-09-011

RESULTS BY TEST

RB-18-1

TEST CODE	Sample 01
default units	(entered units)
CA E	19
ug/ml	
CL IC	17
mg/L	
CO3 A	<1
mg/L as CaCO3	
FE E	26
ug/ml	
HCO3 A	88
mg/L as CaCO3	
MG E	22
ug/ml	
NA E	15
ug/ml	
SO4 IC	4.5
mg/L	

PAGE 3

RECEIVED: 09/04/84

Analytical Serv

REPORT

LAB # 84-09-011

Results by Sample

SAMPLE ID RB-18-1, 120-140

FRACTION OIC

TEST CODE GC 601 NAME EPA Method 601/GC

Date & Time Collected 08/31/84

Category

DATA FILE	A	DATE INJECTED	09/07/84	ANALYST	KS	VERIFIED BY	JSG
CONC. FACTOR				INSTRUMENT	a	COMPOUNDS DETECTED	2
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT		
	Chloromethane	ND	2	Trichloroethene	3.9		
	Bromomethane	ND		Dibromochloromethane	*	ND	
	Vinyl Chloride	ND		1,1,2-Trichloroethane	*	ND	
	Chloroethane	ND		cis-1,3-Dichloropropene	*	ND	
	Methylene Chloride	ND		2-Chloroethylvinyl Ether		ND	
	Trichlorofluoromethane	ND		Bromoform		ND	
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	#	NE	
	1,1-Dichloroethane	ND		Tetrachloroethylene	#	ND	
1	trans-1,2-Dichloroethene	1.6		Chlorobenzene		ND	
	Chloroform	ND		1,3-Dichlorobenzene		ND	
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene		ND	
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene		ND	
	Carbon Tetrachloride	ND					
	Bromodichloromethane	ND					
	1,2-Dichloropropane	ND					
	trans-1,3-Dichloropropene	ND					

CORPORATION

PAGE 4

RECEIVED: 09/04/84

Analytical Serv

REPORT

LAB # 84-09-011

Results by Sample

Continued From Above

SAMPLE ID RB-18-1, 120-140

FRACTION 01C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/31/84

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/L unless otherwise specified.

ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).

*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

CORPORATION

LAB # 84-09-011

REPORT

Analytical Serv

NonReported Work

PAGE 5

RECEIVED: 09/04/84

FRACTION AND TEST CODES FOR WORK NOT REPORTED ELSEWHERE

OID : DUP601

PAGE 1

RECEIVED 08/29/84

Analytical Serv

REPORT

LAB # 84-08-281

09/10/84 20:39:08

REPORT Radian
TO B1 4

Austin

or Sacramento

ATTEN Wayne Pearce

CLIENT MCCLELLAN AF

COMPANY McClellan AFB

FACILITY

SAMPLES 4

WORK ID Reconnaissance Boring

TAKEN 8/28/84

TRANS hand carried

TYPE H2O

P. O. # 212-027-16

INVOICE under separate cover

PREPARED Radian Analytical Services

BY 8501 MoPac Blvd.

P.O. Box 9948

Austin, Texas 78766

ATTEN

PHONE (512) 454-4797

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CONTACT CONOVER

please send one copy of the report to Toby Walters in Austin

SAMPLE IDENTIFICATION

01 RB-19-1, 120
02 RB-19-2, 140
03 RB-19-3, 180
04 RB-19-4, 200

Analytical Serv TEST CODES and NAMES used on this report

CA E Calcium, ICPE
CL IC Chloride IC
CO3 A Carbonate
FE E Iron, ICPE
GC 601 EPA Method 601/GC
HC03 A Bicarbonate
MG E Magnesium, ICPE
NA E Sodium, ICPE
SO4 IC Sulfate IC

PAGE 2
RECEIVED: 08/29/84

Analytical Serv
Results by Sample

LAB # 84-08-281

SAMPLE ID RB-19-1, 120		SAMPLE # 01 FRACTIONS: A, B, C, D	
Date & Time Collected not specified		Category	
CA E	21 CL IC ug/ml	23 CO3 A mg/L	<1 FE E ug/ml
NA E	19 SO4 IC ug/ml	5 mg/L	0.95 HCO3 A mg/L as CaCO3
			108 MG E ug/ml

PAGE 3

RECEIVED: 08/29/84

Analytical Serv

REPORT

LAB # 84-08-281

Results by Sample

SAMPLE ID RB-19-1, 120

FRACTION O1C

TEST CODE GC 601 NAME EPA Method 601/GC

Date & Time Collected not specified

Category

DATA FILE _____
CONC. FACTOR _____

A

DATE INJECTED 08/31/84

ANALYST _____
INSTRUMENT _____

KS

VERIFIED BY JSG
COMPOUNDS DETECTED _____

SCAN

COMPOUND

RESULT

SCAN

COMPOUND

RESULT

Chloromethane ND

Trichloroethene ND

Bromomethane ND

Dibromochloromethane * ND

Vinyl Chloride ND

1,1,2-Trichloroethane * ND

Chloroethane ND

cis-1,3-Dichloropropene * ND

Methylene Chloride ND

2-Chloroethylvinyl Ether ND

Trichlorofluoromethane ND

Bromoform ND

1,1-Dichloroethene ND

1,1,2,2-Tetrachloroethane # ND

1,1-Dichloroethane ND

Tetrachloroethylene # ND

trans-1,2-Dichloroethene ND

Chlorobenzene ND

Chloroform ND

1,3-Dichlorobenzene ND

1,2-Dichloroethane ND

1,2-Dichlorobenzene ND

1,1,1-Trichloroethane ND

1,4-Dichlorobenzene ND

Carbon Tetrachloride ND

Bromodichloromethane ND

1,2-Dichloropropane ND

trans-1,3-Dichloropropene ND

PAGE 4

RECEIVED: 08/29/84

Analytical Serv

REPORT

Results by Sample

LAB # 84-08-281

Continued From Above

SAMPLE ID RB-19-1, 120

FRACTION O1C TEST CODE GC 601 NAME EPA Method 601/GC

Date & Time Collected not specified

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/L unless otherwise specified.

ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).

4Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

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RECEIVED: 08/29/84

Analytical Serv

REPORT

LAB # 84-08-281

Results by Sample

SAMPLE ID RB-19-2, 140

SAMPLE # 02 FRACTIONS: A, B, C, D

Date & Time Collected not specified Category

CA E 21 CL IC 17 CO3 A 17 FE E 22 HCO3 A 96 MG E 17
ug/ml mg/L mg/L as CaCO3 ug/ml mg/L as CaCO3 ug/ml

NA E 21 SO4 IC 3
ug/ml mg/L

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RECEIVED: 08/29/84

Analytical Serv

Results by Sample

REPORT

LAB # 84-08-281

SAMPLE ID RB-19-2, 140

FRACTION 02C

TEST CODE GC 601 NAME EPA Method 601/GC

Date & Time Collected not specified

Category

DATA FILE	B	DATE INJECTED	08/31/84	ANALYST	KS	VERIFIED BY	JSG
CONC. FACTOR				INSTRUMENT	B	COMPOUNDS DETECTED	O
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT		
	Chloromethane	ND		Trichloroethene	ND		
	Bromomethane	ND		Dibromochloromethane *	ND		
	Vinyl Chloride	ND		1,1,2-Trichloroethane *	ND		
	Chloroethane	ND		cis-1,3-Dichloropropene *	ND		
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND		
	Trichlorofluoromethane	ND		Bromoform	ND		
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane #	ND		
	1,1-Dichloroethane	ND		Tetrachloroethylene #	ND		
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND		
	Chloroform	ND		1,3-Dichlorobenzene	ND		
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND		
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND		
	Carbon Tetrachloride	ND					
	Bromodichloromethane	ND					
	1,2-Dichloropropane	ND					
	trans-1,3-Dichloropropene	ND					

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RECEIVED: 08/29/84

Analytical Serv

REPORT

Results by Sample

LAB # 84-08-281

Continued From Above

SAMPLE ID RB-19-2, 140

FRACTION Q2C

TEST CODE GC 601 NAME EPA Method 601/GC

Date & Time Collected not specified

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/L unless otherwise specified.

ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).

*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

PAGE 8

RECEIVED: 08/29/84

Analytical Serv

REPORT

LAB # 84-08-281

Results by Sample

SAMPLE ID RB-19-3, 180

SAMPLE # 03 FRACTIONS: A, B, C, D

Date & Time Collected not specified Category

CA E

17 ug/ml

CL IC

12 mg/L

CO3 A

<1 mg/L as CaCO3

FE E

1.5 ug/ml

HCO3 A

103 mg/L as CaCO3

MG E

12 ug/ml

NA E

16 ug/ml

SO4 IC

3 mg/L

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RECEIVED: 08/29/84

Analytical Serv

REPORT

LAB # 84-08-281

Results by Sample

SAMPLE ID RB-19-3, 180

FRACTION 03C

TEST CODE GC 601 NAME EPA Method 601/GC

Date & Time Collected not specified

Category

DATA FILE	B	DATE INJECTED	08/31/84	ANALYST	KS	VERIFIED BY	JSC
CONC	FACTOR			INSTRUMENT	B	COMPOUNDS DETECTED	O
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT		
	Chloromethane	ND		Trichloroethene	ND		
	Bromomethane	ND		Dibromochloromethane	*	ND	
	Vinyl Chloride	ND		1,1,2-Trichloroethane	*	ND	
	Chloroethane	ND		cis-1,3-Dichloropropene	*	ND	
	Methylene Chloride	ND		2-Chloroethylvinyl Ether		ND	
	Trichlorofluoromethane	ND		Bromoform		ND	
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	#	ND	
	1,1-Dichloroethane	ND		Tetrachloroethylene	#	ND	
	trans-1,2-Dichloroethene	ND		Chlorobenzene		ND	
	Chloroform	ND		1,3-Dichlorobenzene		ND	
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene		ND	
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene		ND	
	Carbon Tetrachloride	ND					
	Bromodichloromethane	ND					
	1,2-Dichloropropane	ND					
	trans-1,3-Dichloropropene	ND					

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Analytical Serv

REPORT

Results by Sample

LAB # 84-08-281

Continued From Above

SAMPLE ID RB-19-3, 180

FRACTION 03C TEST CODE GC 601 NAME EPA Method 601/GC

Date & Time Collected not specified

Category

NOTES AND DEFINITIONS FOR THIS REPORT:

SCAN = scan number or retention time on chromatogram.

All results reported in ug/L unless otherwise specified.

ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).

*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

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RECEIVED: 08/29/84

Analytical Serv

REPORT

LAB # 84-08-281

Results by Sample

SAMPLE ID RB-19-4, 200

SAMPLE # 04 FRACTIONS: A, B, C, D

Date & Time Collected not specified

Category

CA E 17 CL IC ug/ml

10 CO3 A mg/L

<1 FE E

3.7 HCO3 A ug/ml

110 MG E

11 ug/ml

NA E 17 SO4 IC ug/ml

2 mg/L

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RECEIVED: 08/29/84

Analytical Serv

REPORT

LAB # 84-08-281

Results by Sample

SAMPLE ID RB-19-4, 200

FRACTION 04C

TEST CODE GC 601 NAME EPA Method 601/GC

Date & Time Collected not specified

Category

DATA FILE _____ A DATE INJECTED 08/31/84 ANALYST _____ KS VERIFIED BY JSG
CONC. FACTOR _____ INSTRUMENT _____ A COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Chloromethane	ND	_____	Trichloroethene	ND
_____	Bromomethane	ND	_____	Dibromochloromethane *	ND
_____	Vinyl Chloride	ND	_____	1,1,2-Trichloroethane *	ND
_____	Chloroethane	ND	_____	cis-1,3-Dichloropropene *	ND
_____	Methylene Chloride	ND	_____	2-Chloroethylvinyl Ether	ND
_____	Trichlorofluoromethane	ND	_____	Bromoform	ND
_____	1,1-Dichloroethene	ND	_____	1,1,2,2-Tetrachloroethane #	ND
_____	1,1-Dichloroethane	ND	_____	Tetrachloroethylene #	ND
_____	trans-1,2-Dichloroethene	ND	_____	Chlorobenzene	ND
_____	Chloroform	ND	_____	1,3-Dichlorobenzene	ND
_____	1,2-Dichloroethane	ND	_____	1,2-Dichlorobenzene	ND
_____	1,1,1-Trichloroethane	ND	_____	1,4-Dichlorobenzene	ND
_____	Carbon Tetrachloride	ND			
_____	Bromodichloromethane	ND			
_____	1,2-Dichloropropane	ND			
_____	trans-1,3-Dichloropropene	ND			

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RECEIVED: 08/29/84

Analytical Serv

REPORT

LAB # 84-08-281

Results by Sample

Continued From Above

SAMPLE ID RB-19-4, 200

FRACTION 04C

TEST CODE GC 601 NAME EPA Method 601/GC

Date & Time Collected not specified

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/L unless otherwise specified.

ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).

*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.

#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

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RECEIVED: 08/29/84

Analytical Serv

REPORT

LAB # 84-08-281

NonReported Work

FRACTION AND TEST CODES FOR WORK NOT REPORTED ELSEWHERE

01D : DUP601
02D : DUP601
03D : DUP601
04D : DUP601

PAGE 1

RECEIVED: 08/30/84

Analytical Serv

REPORT

LAB # 84-08-287

09/24/84 11:23:44

REPORT Radian

TO BL 4

Austin

or Sacramento

ATTEN Wayne Pearce

CLIENT MCCLELLAN AFB

COMPANY McClellan AFB

FACILITY

SAMPLES 4

PREPARED Radian Analytical Services

BY 8501 MoPac Blvd.

P.O. Box 9948

Austin, Texas 78766

ATTEN

PHONE (512) 454-4797

CERTIFIED BY

CONTACT CONOVER

please send one copy of the report to Toby Walters in Austin

WORK ID Reconnaissance Boring

TAKEN 8/29/84

TRANS hand carried

TYPE H2O

P.O. # 212-027-16

INVOICE under separate cover

SAMPLE IDENTIFICATION

01 RB-20-1, 140

02 RB-20-2, 160

03 RB-20-3, 180

04 RB-20-4, 200

Analytical Serv TEST CODES and NAMES used on this report

CA E Calcium, ICPEs

CL IC Chloride IC

CO3 A Carbonate

FE E Iron, ICPEs

GC 601 EPA Method 601/GC

HCO3 A Bicarbonate

MG E Magnesium, ICPEs

NA E Sodium, ICPEs

SO4 IC Sulfate IC

PAGE 2

RECEIVED: 08/30/84

Analytical Serv

REPORT

LAB # 84-08-287

Results by Sample

SAMPLE ID RB-20-1, 140

SAMPLE # 01 FRACTIONS: A,B,C,D

Date & Time Collected 08/29/84

Category

CA E 14 CL IC ug/ml

11 mg/L

CO3 A mg/L as CaCO3

<1

FE E ug/ml

14

HCO3 A mg/L as CaCO3

77

MG E ug/ml

NA E 10 SO4 IC ug/ml

4.5 mg/L

PAGE 3

RECEIVED: 08/30/84

Analytical Serv

REPORT

LAB # 84-08-287

Results by Sample

SAMPLE ID RB-20-1, 140

FRACTION Q1C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/29/84

Category

DATA FILE B DATE INJECTED 09/05/84 ANALYST KS VERIFIED BY JSG
 CONC. FACTOR INSTRUMENT B COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Chloromethane	ND		Trichloroethene	ND
	Bromomethane	ND		Dibromochloromethane *	ND
	Vinyl Chloride	ND		1,1,2-Trichloroethane *	ND
	Chloroethane	ND		cis-1,3-Dichloropropene *	ND
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND
	Trichlorofluoromethane	ND		Bromoform	ND
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane #	ND
	1,1-Dichloroethane	ND		Tetrachloroethylene #	ND
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND
	Chloroform	ND		1,3-Dichlorobenzene	ND
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND
	Carbon Tetrachloride	ND			
	Bromodichloromethane	ND			
	1,2-Dichloropropane	ND			
	trans-1,3-Dichloropropene	ND			

PAGE 4

RECEIVED: 08/30/84

Analytical Serv

REPORT

Results by Sample

LAB # 84-08-287

Continued From Above

SAMPLE ID RB-20-1, 140

FRACTION O1C

TEST CODE GC 601 NAME EPA Method 601/GC

Date & Time Collected 08/29/84

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/L unless otherwise specified.

ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).

*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

PAGE 5

RECEIVED: 08/30/84

Analytical Serv

REPORT

LAB # 84-08-287

Results by Sample

SAMPLE ID RB-20-2, 160		SAMPLE # 02		FRACTIONS: A, B, C, D	
Date & Time Collected 08/29/84		Category			
CA E	21 ug/ml	CL IC	9.9 mg/L	CO3 A	<1 mg/L as CaCO3
FE E	0.69 ug/ml	HCO3 A	82 mg/L	MG E	14 ug/ml
NA E	10 ug/ml	SO4 IC	200 mg/L		

PAGE 6

RECEIVED: 08/30/84

Analytical Serv

REPORT

LAB # 84-08-287

Results by Sample

SAMPLE ID RB-20-2, 160

FRACTION 02C

TEST CODE GC 601 NAME EPA Method 601/GC

Date & Time Collected 08/29/84

Category

DATA FILE
CONC. FACTOR

A

DATE INJECTED 09/05/84

ANALYST
INSTRUMENT

KS

VERIFIED BY JSG
COMPOUNDS DETECTED 3

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
—	Chloromethane	ND	—	Trichloroethene	ND
—	Bromomethane	ND	—	Dibromochloromethane *	ND
—	Vinyl Chloride	ND	—	1,1,2-Trichloroethane *	ND
—	Chloroethane	ND	—	cis-1,3-Dichloropropene *	ND
1	Methylene Chloride	1.5	—	2-Chloroethylvinyl Ether	ND
2	Trichlorofluoromethane	2.2	—	Bromoform	ND
—	1,1-Dichloroethene	ND	—	1,1,2,2-Tetrachloroethane #	ND
—	1,1-Dichloroethane	ND	—	Tetrachloroethylene #	ND
—	trans-1,2-Dichloroethene	ND	—	Chlorobenzene	ND
—	Chloroform	ND	—	1,3-Dichlorobenzene	ND
—	1,2-Dichloroethane	ND	—	1,2-Dichlorobenzene	ND
3	1,1,1-Trichloroethane	2.4	—	1,4-Dichlorobenzene	ND
—	Carbon Tetrachloride	ND			
—	Bromodichloromethane	ND			
—	1,2-Dichloropropane	ND			
—	trans-1,3-Dichloropropene	ND			

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RECEIVED: 08/30/84

SAMPLE ID RB-20-2, 160

Analytical Serv

Results by Sample

REPORT

LAB # 84-08-287

Continued From Above

FRACTION 02C TEST CODE GC 601 NAME EPA Method 601/GC

Date & Time Collected 08/29/84

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/L unless otherwise specified.

ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).

*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

PAGE 8

RECEIVED: 08/30/84

Analytical Serv

REPORT

LAB # 84-08-287

Results by Sample

SAMPLE ID RB-20-3, 180

SAMPLE # 03 FRACTIONS: A, B, C, D

Date & Time Collected 08/29/84

Category

CA E 16 CL IC

ug/ml

9.5

mg/L

CO3 A

mg/L as CaCO3

<1

FE E

ug/ml

15

HCO3 A

mg/L as CaCO3

92

MG E

ug/ml

13

NA E 9.6 SO4 IC

ug/ml

55

mg/L

AD-A156 283

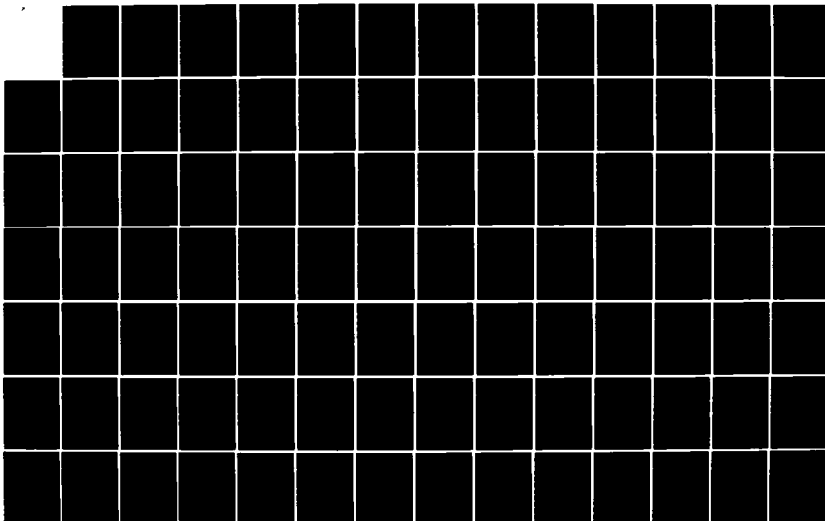
INSTALLATION RESTORATION PROGRAM PHASE II (STAGE 2-1)
VOLUME 2(U) RADIAN CORP AUSTIN TX R W BAUER MAY 85
F33615-83-D-4001

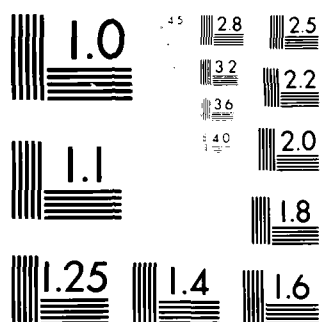
09/10

UNCLASSIFIED

F/G 13/2

NL





MICROCOPY RESOLUTION TEST CHART
 NATIONAL BUREAU OF STANDARDS-1963-A

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RECEIVED: 08/30/84

Analytical Serv

REPORT

LAB # 84-08-287

Results by Sample

SAMPLE ID RB-20-3, 180

FRACTION Q3C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/29/84

Category

DATA FILE _____
CONC. FACTOR _____

DATE INJECTED 09/05/84

ANALYST _____
INSTRUMENT _____

VERIFIED BY JSG
COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
—	Chloromethane	ND	—	Trichloroethene	ND
—	Bromomethane	ND	—	Dibromochloromethane *	ND
—	Vinyl Chloride	ND	—	1,1,2-Trichloroethane *	ND
—	Chloroethane	ND	—	cis-1,3-Dichloropropene *	ND
—	Methylene Chloride	ND	—	2-Chloroethylvinyl Ether	ND
—	Trichlorofluoromethane	ND	—	Bromoform	ND
—	1,1-Dichloroethene	ND	—	1,1,2,2-Tetrachloroethane #	ND
—	1,1-Dichloroethane	ND	—	Tetrachloroethylene #	ND
—	trans-1,2-Dichloroethene	ND	—	Chlorobenzene	ND
—	Chloroform	ND	—	1,3-Dichlorobenzene	ND
—	1,2-Dichloroethane	ND	—	1,2-Dichlorobenzene	ND
—	1,1,1-Trichloroethane	ND	—	1,4-Dichlorobenzene	ND
—	Carbon Tetrachloride	ND			
—	Bromodichloromethane	ND			
—	1,2-Dichloropropane	ND			
—	trans-1,3-Dichloropropene	ND			

COMPLETION

PAGE 10

RECEIVED: 08/30/84

Analytical Serv

REPORT

Results by Sample

LAB # 84-08-287

Continued From Above

SAMPLE ID RB-20-3, 180

FRACTION Q3C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/29/84

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/L unless otherwise specified.

ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).

*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.

#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

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RECEIVED: 08/30/84

Analytical Serv

REPORT

LAB # 84-08-287

Results by Sample

SAMPLE ID RB-20-4, 200		SAMPLE # 04		FRACTIONS: A, B, C, D	
Date & Time Collected 08/29/84		Category			
CA_E	17 ug/ml	CL_IC	9.4 mg/L	CO3_A	<1 mg/L as CaCO3
NA_E	9.6 ug/ml	SO4_IC	4.8 mg/L	FE_E	33 ug/ml
				HCO3_A	88 mg/L as CaCO3
					23 ug/ml

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RECEIVED: 08/30/84

Analytical Serv

REPORT

Results by Sample

LAB # 84-08-287

SAMPLE ID RB-20-4, 200

FRACTION 04C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/29/84

Category

DATA FILE _____
CONC. FACTOR _____

DATE INJECTED 09/05/84

ANALYST _____
INSTRUMENT _____

VERIFIED BY JSG _____
COMPOUNDS DETECTED _____

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Chloromethane	ND	_____	Trichloroethene	ND
_____	Bromomethane	ND	_____	Dibromochloromethane *	ND
_____	Vinyl Chloride	ND	_____	1,1,2-Trichloroethane *	ND
_____	Chloroethane	ND	_____	cis-1,3-Dichloropropene *	ND
_____	Methylene Chloride	ND	_____	2-Chloroethylvinyl Ether	ND
_____	Trichlorofluoromethane	ND	_____	Bromoform	ND
_____	1,1-Dichloroethene	ND	_____	1,1,2,2-Tetrachloroethane #	ND
_____	1,1-Dichloroethane	ND	_____	Tetrachloroethylene #	ND
_____	trans-1,2-Dichloroethene	ND	_____	Chlorobenzene	ND
_____	Chloroform	ND	_____	1,3-Dichlorobenzene	ND
_____	1,2-Dichloroethane	ND	_____	1,2-Dichlorobenzene	ND
_____	1,1,1-Trichloroethane	ND	_____	1,4-Dichlorobenzene	ND
_____	Carbon Tetrachloride	ND			
_____	Bromodichloromethane	ND			
_____	1,2-Dichloropropane	ND			
_____	trans-1,3-Dichloropropene	ND			

COMPUTATION

PAGE 13

RECEIVED: 08/30/84

Analytical Serv

REPORT

Results by Sample

LAB # 84-08-287

Continued From Above

SAMPLE ID RB-20-4, 200

FRACTION 04C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/29/84

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/L unless otherwise specified.

ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).

*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.

#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

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RECEIVED: 08/30/84

Analytical Serv

REPORT

LAB # 84-08-287

NonReported Work

FRACTION AND TEST CODES FOR WORK NOT REPORTED ELSEWHERE

01D : DUP601
02D : DUP601
03D : DUP601
04D : DUP601

KRADIAN

COMMUNICATION

PAGE 1

RECEIVED: 08/20/84

Analytical Serv

REPORT

LAB # 84-08-186

08/30/84 16:32:05

REPORT Radian

TO BL 4

Austin

or Sacramento

ATTN Wayne Pearce

CLIENT MCCLELLAN AFB

COMPANY McClellan AFB

FACILITY

SAMPLES 2

WORK ID Reconno Boring

TAKEN 8/17/84

TRANS hand

TYPE H2O

P.O. # 212-027-16

INVOICE under separate cover

PREPARED Radian Analytical Services

BY 8501 MoPac Blvd.

P.O. Box 9948

Austin, Texas 78766

ATTN

PHONE (512) 454-4797

CERTIFIED BY

CONTACT CONOVER

Glenn Newma

SAMPLE IDENTIFICATION

Q1 RB-21-1, 130-140

Q2 RB-21-2, 175-180

Analytical Serv TEST CODES and NAMES used on this report

CA E	Calcium, ICPE
CL IC	Chloride IC
CO3 A	Carbonate
FE E	Iron, ICPE
QC 601	EPA Method 601/GC
HCO3 A	Bicarbonate
MG E	Magnesium, ICPE
NA E	Sodium, ICPE
SO4 IC	Sulfate IC

PAGE 2
RECEIVED: 08/20/84
Analytical Serv
Results by Sample
REPORT
LAB # 84-08-186

SAMPLE ID RB-21-1, 130-140		SAMPLE # 01		FRACTIONS: A, B, C, D	
Date & Time Collected 08/17/84		Category			
CA E	14 ug/ml	CL IC	14 mg/L	CO3 A	<1 mg/L as CaCO3
				FE E	0.84 ug/ml
				HCO3 A	83 mg E
					9.2 ug/ml
NA E	22 ug/ml	S04 IC	6 mg/L		

PAGE 3

RECEIVED: 08/20/84

Analytical Serv

Results by Sample

REPORT

LAB # 84-08-186

SAMPLE ID RB-21-1, 130-140

FRACTION OIC

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/17/84

Category

DATA FILE
CONC. FACTOR

A

DATE INJECTED 08/23/84

ANALYST
INSTRUMENT

KWK

VERIFIED BY JSG
COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
—	Chloromethane	ND	—	Trichloroethene	ND
—	Bromomethane	ND	—	Dibromochloromethane *	ND
—	Vinyl Chloride	ND	—	1,1,2-Trichloroethane *	ND
—	Chloroethane	ND	—	cis-1,3-Dichloropropene *	ND
—	Methylene Chloride	ND	—	2-Chloroethylvinyl Ether	ND
—	Trichlorofluoromethane	ND	—	Bromoform	ND
—	1,1-Dichloroethene	ND	—	1,1,2,2-Tetrachloroethane #	ND
—	1,1-Dichloroethane	ND	—	Tetrachloroethylene #	ND
—	trans-1,2-Dichloroethene	ND	—	Chlorobenzene	ND
—	Chloroform	ND	—	1,3-Dichlorobenzene	ND
—	1,2-Dichloroethane	ND	—	1,2-Dichlorobenzene	ND
—	1,1,1-Trichloroethane	ND	—	1,4-Dichlorobenzene	ND
—	Carbon Tetrachloride	ND			
—	Bromodichloromethane	ND			
—	1,2-Dichloropropane	ND			
—	trans-1,3-Dichloropropene	ND			

ICARADIAN
CORPORATION

PAGE 4

RECEIVED: 08/20/84

Analytical Serv

Results by Sample

REPORT

LAB # 84-08-186

Continued From Above

SAMPLE ID RB-21-1, 130-140

FRACTION O1C

TEST CODE GC 601 NAME EPA Method 601/GC

Date & Time Collected 08/17/84

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/L unless otherwise specified.

ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).

*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.

#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

RADIANT

CONCENTRATIONS

PAGE 5

RECEIVED: 08/20/84

Analytical Serv

REPORT

Results by Sample

LAB # 84-08-186

SAMPLE ID RB-21-2, 175-180

SAMPLE # 02 FRACTIONS: A,B,C,D

Date & Time Collected 08/17/84

Category

CA E 25 ug/ml

CL IC

14 mg/L

CO3 A

<1 mg/L as CaCO3

FE E

28 ug/ml

HCO3 A

81 mg/L as CaCO3

MG E

20 ug/ml

NA E 30 ug/ml

SO4 IC

5 mg/L

LAB # 84-08-186

Analytical Serv REPORT

PAGE 6

RECEIVED: 08/20/84

Results by Sample

SAMPLE ID RB-21-2, 175-180

FRACTION 02C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/17/84

Category

DATA FILE	A	DATE INJECTED	08/27/84	ANALYST	MCL	VERIFIED BY	JSG
CONC. FACTOR				INSTRUMENT	a	COMPOUNDS DETECTED	1
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT		
	Chloromethane	ND		Trichloroethene	ND		
	Bromomethane	ND		Dibromochloromethane	*	ND	
	Vinyl Chloride	ND		1,1,2-Trichloroethane	*	ND	
	Chloroethane	ND		cis-1,3-Dichloropropene	*	ND	
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND		
	Trichlorofluoromethane	ND		Bromoform	ND		
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	#	ND	
	1,1-Dichloroethane	ND		Tetrachloroethylene	#	ND	
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND		
	Chloroform	ND		1,3-Dichlorobenzene	ND		
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND		
1	1,1,1-Trichloroethane	0.7		1,4-Dichlorobenzene	ND		
	Carbon Tetrachloride	ND					
	Bromodichloromethane	ND					
	1,2-Dichloropropane	ND					
	trans-1,3-Dichloropropene	ND					

LRADIAN
CORPORATION

PAGE 7

RECEIVED: 08/20/84

Analytical Serv

Results by Sample

REPORT

LAB # 84-08-186

Continued From Above

SAMPLE ID RB-21-2, 175-180

FRACTION 02C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/17/84

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/L unless otherwise specified.

ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).

*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

LABORATORY
CORPORATION

PAGE 8

RECEIVED: 08/20/84

Analytical Serv

REPORT

NonReported Work

LAB # 84-08-186

FRACTION AND TEST CODES FOR WORK NOT REPORTED ELSEWHERE

01D : DUP601

02D : DUP601

PAGE 1

RECEIVED: 08/22/84

Analytical Serv

REPORT

09/10/84 20:33:55

LAB # 84-08-219

REPORT Radian

TO B1 4

Austin

or Sacramento

ATTEN Wayne Pearce

CLIENT MCCLELLAN AFB

COMPANY McClellan AFB

FACILITY

SAMPLES 3

WORK ID Reconng Boring

TAKEN 8/22/84

TRANS hand carried

TYPE H2O

P.O. # 212-027-16

INVOICE under separate cover

PREPARED Radian Analytical Services

BY 8501 MoPac Blvd.

P.O. Box 9748

Austin, Texas 78766

ATTEN

PHONE (512) 454-4797

CONTACT CONOVER

CERTIFIED BY

Louis Newma

please send one copy of the report to Toby Walters in Austin
Note: Second column confirmation performed on Split OIC.

SAMPLE IDENTIFICATION

01 RB-22-1, 95-100

02 RB-22-2, 140-145

03 RB-22-3, 175-180

Analytical Serv TEST CODES and NAMES used on this report

CA E Calcium, ICPEs

CL IC Chloride IC

CO3 A Carbonate

FE E Iron, ICPEs

GC 601 EPA Method 601/GC

HCO3 A Bicarbonate

MG E Magnesium, ICPEs

NA E Sodium, ICPEs

SO4 IC Sulfate IC

PAGE 2

RECEIVED: 08/22/84

Analytical Serv

REPORT

LAB # 84-08-219

Results by Sample

SAMPLE ID RB-22-1, 95-100

SAMPLE # 01 FRACTIONS: A, B, C, D

Date & Time Collected 08/22/84

Category

CA E 20 CL IC 25 CO3 A <1 FE E 2.3 HCO3 A 107 MG E 17
ug/ml mg/L mg/L as CaCO3 ug/ml mg/L as CaCO3 ug/ml

NA E 24 SO4 IC 7.5
ug/ml mg/L

PAGE 3

RECEIVED: 08/22/84

Analytical Serv

REPORT

LAB # 84-08-219

Results by Sample

SAMPLE ID RB-22-1, 95-100

FRACTION 01C

TEST CODE GC 601 NAME EPA Method 601/GC

Date & Time Collected 08/22/84

Category

DATA FILE _____ A DATE INJECTED 08/27/84 ANALYST _____ KS VERIFIED BY JSG
CONC. FACTOR _____ INSTRUMENT _____ A COMPOUNDS DETECTED 3

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Chloromethane	ND	3	Trichloroethene	0.3
_____	Bromomethane	ND	_____	Dibromochloromethane *	ND
_____	Vinyl Chloride	ND	_____	1,1,2-Trichloroethane *	ND
_____	Chloroethane	ND	_____	cis-1,3-Dichloropropene *	ND
_____	Methylene Chloride	ND	_____	2-Chloroethylvinyl Ether	ND
_____	Trichlorofluoromethane	ND	_____	Bromoform	ND
1	1,1-Dichloroethene	0.8	_____	1,1,2,2-Tetrachloroethane #	ND
_____	1,1-Dichloroethane	ND	_____	Tetrachloroethylene #	ND
_____	trans-1,2-Dichloroethene	ND	_____	Chlorobenzene	ND
_____	Chloroform	ND	_____	1,3-Dichlorobenzene	ND
_____	1,2-Dichloroethane	ND	_____	1,2-Dichlorobenzene	ND
2	1,1,1-Trichloroethane	0.3	_____	1,4-Dichlorobenzene	ND
_____	Carbon Tetrachloride	ND			
_____	Bromodichloromethane	ND			
_____	1,2-Dichloropropane	ND			
_____	trans-1,3-Dichloropropene	ND			

LABORATORY

PAGE 4

RECEIVED: 08/22/84

Analytical Serv

Results by Sample

REPORT

LAB # 84-08-219

Continued From Above

SAMPLE ID RB-22-1, 95-100

FRACTION O1C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/22/84

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

PAGE 5

RECEIVED: 08/22/84

Analytical Serv

REPORT

LAB # 84-08-219

Results by Sample

SAMPLE ID RB-22-2, 140-145

SAMPLE # 02 FRACTIONS: A,B,C,D

Date & Time Collected 08/22/84

Category

CA E 16 CL IC 22 CO3 A 6.1 FE E 86 MG E 13
ug/ml mg/L mg/L as CaCO3 ug/ml mg/L as CaCO3 ug/ml

NA E 21 SO4 IC 5.1
ug/ml mg/L

PAGE 6

RECEIVED: 08/22/84

SAMPLE ID RB-22-2, 140-145

Analytical Serv

Results by Sample

REPORT

LAB # 84-08-219

FRACTION 02C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/22/84

Category

DATA FILE
CONC. FACTOR

A

DATE INJECTED 08/27/84

ANALYST

KS

VERIFIED BY JSG

COMPOUNDS DETECTED 0

A

SCAN

COMPOUND

RESULT

SCAN

COMPOUND

RESULT

Chloromethane ND

Trichloroethene ND

Bromomethane ND

Dibromochloromethane * ND

Vinyl Chloride ND

1,1,2-Trichloroethane * ND

Chloroethane ND

cis-1,3-Dichloropropene * ND

Methylene Chloride ND

2-Chloroethylvinyl Ether ND

Trichlorofluoromethane ND

Bromoform ND

1,1-Dichloroethene ND

1,1,2,2-Tetrachloroethane # ND

1,1-Dichloroethane ND

Tetrachloroethylene # ND

trans-1,2-Dichloroethene ND

Chlorobenzene ND

Chloroform ND

1,3-Dichlorobenzene ND

1,2-Dichloroethane ND

1,2-Dichlorobenzene ND

1,1,1-Trichloroethane ND

1,4-Dichlorobenzene ND

Carbon Tetrachloride ND

Bromodichloromethane ND

1,2-Dichloropropane ND

trans-1,3-Dichloropropene ND

PAGE 7

RECEIVED: 08/22/84

Analytical Serv

REPORT

Results by Sample

LAB # 84-08-219

Continued From Above

SAMPLE ID RB-22-2, 140-145

FRACTION 02C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/22/84

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/L unless otherwise specified.

ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).

*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.

#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

PAGE 8

RECEIVED: 08/22/84

Analytical Serv

REPORT

LAB # 84-08-219

Results by Sample

SAMPLE ID RB-22-3, 175-180

SAMPLE # 03 FRACTIONS: A, B, C, D

Date & Time Collected 08/22/84

Category

CA E

14 ug/ml

CL IC

16 mg/L

CO3 A

<1 mg/L as CaCO3

FE E

3.0 ug/ml

HCO3 A

77 mg/L as CaCO3

MG E

11 ug/ml

NA E

19 ug/ml

SO4 IC

2.7 mg/L

PAGE 9

RECEIVED: 08/22/84

Analytical Serv

REPORT

LAB # 84-08-219

Results by Sample

SAMPLE ID RB-22-3, 175-180

FRACTION 03C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/22/84

Category

DATA FILE _____
CONC. FACTOR _____

A

DATE INJECTED 08/27/84

ANALYST _____
INSTRUMENT _____

KS

VERIFIED BY JSG
COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Chloromethane	ND	_____	Trichloroethene	ND
_____	Bromomethane	ND	_____	Dibromochloromethane *	ND
_____	Vinyl Chloride	ND	_____	1,1,2-Trichloroethane *	ND
_____	Chloroethane	ND	_____	cis-1,3-Dichloropropene *	ND
_____	Methylene Chloride	ND	_____	2-Chloroethylvinyl Ether	ND
_____	Trichlorofluoromethane	ND	_____	Bromoform	ND
_____	1,1-Dichloroethene	ND	_____	1,1,2,2-Tetrachloroethane #	ND
_____	1,1-Dichloroethane	ND	_____	Tetrachloroethylene #	ND
_____	trans-1,2-Dichloroethene	ND	_____	Chlorobenzene	ND
_____	Chloroform	ND	_____	1,3-Dichlorobenzene	ND
_____	1,2-Dichloroethane	ND	_____	1,2-Dichlorobenzene	ND
_____	1,1,1-Trichloroethane	ND	_____	1,4-Dichlorobenzene	ND
_____	Carbon Tetrachloride	ND			
_____	Bromodichloromethane	ND			
_____	1,2-Dichloropropane	ND			
_____	trans-1,3-Dichloropropene	ND			

PAGE 10

RECEIVED: 08/22/84

Analytical Serv

REPORT

Results by Sample

LAB # 84-08-219

Continued From Above

SAMPLE ID RB-22-3, 175-180

FRACTION 03C TEST CODE GC 601 NAME EPA Method 601/GC

Date & Time Collected 08/22/84

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/L unless otherwise specified.

ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).

*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.

#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

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RECEIVED: 08/22/84

Analytical Serv

REPORT

LAB # 84-08-219

NonReported Work

FRACTION AND TEST CODES FOR WORK NOT REPORTED ELSEWHERE

01D : DUP601
02D : DUP601
03D : DUP601

PAGE 1

RECEIVED: 08/27/84

Analytical Serv

REPORT

LAB # 84-08-247

09/10/84 20:28:43

REPORT Radian
TO Bl 4
Austin
or Sacramento
ATTEN Wayne Pearce
CLIENT MCCLELLAN AF SAMPLES 3
COMPANY McClellan AFB
FACILITY

PREPARED Radian Analytical Services
BY 8501 MoPac Blvd.
P.O. Box 9948
Austin, Texas 78766
ATTEN
PHONE (512) 454-4797

Luise Yerna
CERTIFIED BY

CONTACT CONOVER

please send one copy of the report to Toby Walters in Austin

WORK ID Reconnaissance Boring
TAKEN 8/23/84
TRANS hand carried
TYPE H2O
P.O. # /12-027-16
INVOICE under separate cover

SAMPLE IDENTIFICATION

01 RB-23-1, 75-85
02 RB-23-2, 155-160
03 RB-23-3, 175-180

Analytical Serv TEST CODES and NAMES used on this report

CA E Calcium, ICPEs
CL IC Chloride IC
CO3 A Carbonate
FE E Iron, ICPEs
GC 601 EPA Method 601/GC
HC03 A Bicarbonate
MG E Magnesium, ICPEs
NA E Sodium, ICPEs
SO4 IC Sulfate IC

PAGE 2

RECEIVED: 08/27/84

Analytical Serv

REPORT

LAB # 84-08-247

Results by Sample

SAMPLE ID RB-23-1, 75-85

SAMPLE # 01 FRACTIONS: A,B,C,D

Date & Time Collected 08/24/84

Category

CA E 21 CL IC 18 CO3 A <1 FE E 30 HCO3 A 83 MG E 21
ug/ml mg/L mg/L as CaCO3 ug/ml mg/L as CaCO3 ug/ml

NA E 22 S04 IC 10
ug/ml mg/L

PAGE 3

Analytical Serv

REPORT

LAB # 84-08-247

RECEIVED: 08/27/84

Results by Sample

SAMPLE ID RD-23-1, 75-85

FRACTION 01C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/24/84

Category

DATA FILE
CONC. FACTOR

A

DATE INJECTED 08/31/84

ANALYST
INSTRUMENT

MCL

VERIFIED BY JSG
COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Chloromethane	ND		Trichloroethene	ND
	Bromomethane	ND		Dibromochloromethane *	ND
	Vinyl Chloride	ND		1,1,2-Trichloroethane *	ND
	Chloroethane	ND		cis-1,3-Dichloropropene *	ND
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND
	Trichlorofluoromethane	ND		Bromoform	ND
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane #	ND
	1,1-Dichloroethane	ND		Tetrachloroethylene #	ND
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND
	Chloroform	ND		1,3-Dichlorobenzene	ND
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND
	Carbon Tetrachloride	ND			
	Bromodichloromethane	ND			
	1,2-Dichloropropane	ND			
	trans-1,3-Dichloropropene	ND			

CONFIDENTIAL

PAGE 4

RECEIVED: 08/27/84

Analytical Serv

REPORT

Results by Sample

LAB # 84-08-247

Continued From Above

SAMPLE ID RB-23-1, 75-85

FRACTION O1C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/24/84

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/L unless otherwise specified.

ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).

*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.

#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

LABORATORY

PAGE 5

RECEIVED: 08/27/84

Analytical Serv

REPORT

LAB # 84-08-247

Results by Sample

SAMPLE ID RB-23-2, 155-160

SAMPLE # 02 FRACTIONS: A, B, C, D

Date & Time Collected 08/23/84

Category

CA E 17 CL IC 17 CO3 A 1.3 FE E 1.3 HCO3 A 88 MG E 13
ug/ml mg/L as CaCO3 ug/ml mg/L as CaCO3 ug/ml

NA E 19 SO4 IC 4
ug/ml mg/L

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RECEIVED: 08/27/84

Analytical Serv

REPORT

LAB # 84-08-247

Results by Sample

SAMPLE ID RB-23-2, 155-160

FRACTION 02C

TEST CODE GC 601 NAME EPA Method 601/GC

Date & Time Collected 08/23/84

Category

DATA FILE	B	DATE INJECTED	08/31/84	ANALYST	MCL	VERIFIED BY	JSG
CONC. FACTOR				INSTRUMENT	B	COMPOUNDS DETECTED	0
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT		
	Chloromethane	ND		Trichloroethene	ND		
	Bromomethane	ND		Dibromochloromethane *	ND		
	Vinyl Chloride	ND		1,1,2-Trichloroethane *	ND		
	Chloroethane	ND		cis-1,3-Dichloropropene *	ND		
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND		
	Trichlorofluoromethane	ND		Bromoform	ND		
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane #	ND		
	1,1-Dichloroethane	ND		Tetrachloroethylene #	ND		
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND		
	Chloroform	ND		1,3-Dichlorobenzene	ND		
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND		
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND		
	Carbon Tetrachloride	ND					
	Bromodichloromethane	ND					
	1,2-Dichloropropane	ND					
	trans-1,3-Dichloropropene	ND					

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RECEIVED: 08/27/84

SAMPLE ID RB-23-2, 155-160

Analytical Serv

Results by Sample

REPORT

LAB # 84-08-247

Continued From Above

FRACTION 02C TEST CODE GC 601 NAME EPA Method 601/GC

Date & Time Collected 08/23/84

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/L unless otherwise specified.

ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).

*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.

#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

LABORATORY

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RECEIVED: 08/27/84

Analytical Serv

REPORT

LAB # 84-08-247

Results by Sample

SAMPLE ID RB-23-3, 175-180

SAMPLE # 03 FRACTIONS: A, B, C, D

Date & Time Collected 08/23/84

Category

CA E 19 CL IC 17 CO3 A 4.0 HCO3 A 96 MG E 16
ug/ml mg/L ug/ml mg/L as CaCO3 ug/ml

NA E 20 SO4 IC 5
ug/ml mg/L

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RECEIVED: 08/27/84

Analytical Serv

REPORT

LAB # 84-08-247

Results by Sample

SAMPLE ID RB-23-3, 175-180

FRACTION 03C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/23/84

Category

DATA FILE
CONC FACTOR

A

DATE INJECTED 08/31/84

ANALYST
INSTRUMENT

KS

VERIFIED BY JSC
COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Chloromethane	ND		Trichloroethene	ND
	Bromomethane	ND		Dibromochloromethane *	ND
	Vinyl Chloride	ND		1,1,2-Trichloroethane *	ND
	Chloroethane	ND		cis-1,3-Dichloropropene *	ND
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND
	Trichlorofluoromethane	ND		Bromoform	ND
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane #	ND
	1,1-Dichloroethane	ND		Tetrachloroethylene #	ND
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND
	Chloroform	ND		1,3-Dichlorobenzene	ND
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND
	Carbon Tetrachloride	ND			
	Bromodichloromethane	ND			
	1,2-Dichloropropane	ND			
	trans-1,3-Dichloropropene	ND			

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RECEIVED: 08/27/84

SAMPLE ID RD-23-3, 175-180

Analytical Serv

Results by Sample

REPORT

LAB # 84-08-247

Continued From Above

FRACTION 03C TEST CODE GC 601 NAME EPA Method 601/GC

Date & Time Collected 08/23/84

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/L unless otherwise specified.

NO = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).

*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.

#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

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RECEIVED: 08/27/84

Analytical Serv

REPORT

NonReported Work

LAB # 84-08-247

FRACTION AND TEST CODES FOR WORK NOT REPORTED ELSEWHERE

01D : DUP601
02D : DUP601
03D : DUP601

PAGE 1

RECEIVED: 08/03/84

Analytical Serv

REPORT

LAB # 84-08-031

08/22/84 14:23:38

REPORT Radian

TO B1 4

Austin

or Sacramento

ATTEN Wayne Pearce

CLIENT MCCLELLAN AF

COMPANY McClellan AFB

FACILITY

SAMPLES 3

WORK ID Recon. Boring

TAKEN 8/2/84, T. Walters

TRANS hand carried

TYPE H2O

P O # 212-027-16

INVOICE under separate cover

PREPARED Radian Analytical Services

BY 8501 MoPac Blvd.

P O Box 9948

Austin, Texas 78766

ATTEN

PHONE (512) 454-4797

CONTACT CONOVER

CERTIFIED BY

Debbie Newman

SAMPLE IDENTIFICATION

01 RB-24-1 85-90 *EW*

02 RB-24-2, 105-110

03 RB-24-3, 120-130

Analytical Serv TEST CODES and NAMES used on this report

CA E	Calcium, ICPE
CL IC	Chloride IC
CO3 A	Carbonate
FE E	Iron, ICPE
GC 601	EPA Method 601/GC
HC03 A	Bicarbonate
MG E	Magnesium, ICPE
NA E	Sodium, ICPE
SO4 IC	Sulfate IC

PAGE 2
RECEIVED: 08/03/84

Analytical Serv
Results by Sample

LAB # 84-08-031

SAMPLE ID RB-24-1

SAMPLE # 01 FRACTIONS: A,B,C,D

Date & Time Collected 08/02/84

Category

CA E 19 CL IC 21 CO3 A <1 FE E 7.9 HCO3 A 100 MG E 13
ug/ml mg/L mg/L as CaCO3 ug/ml mg/L as CaCO3 ug/ml

NA E 24 SO4 IC 7.1
ug/ml mg/L

PAGE 3

RECEIVED: 08/03/84

Analytical Serv

Results by Sample

REPORT

LAB # 84-08-031

SAMPLE ID RB-24-1

FRACTION OIC

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/02/84

Category

DATA FILE	A	DATE INJECTED	08/10/84	ANALYST	MCL	VERIFIED BY	JSG
CONC. FACTOR				INSTRUMENT	A	COMPOUNDS DETECTED	O
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT		
	Chloromethane	ND		Trichloroethene	ND		
	Bromomethane	ND		Dibromochloromethane	*	ND	
	Vinyl Chloride	ND		1,1,2-Trichloroethane	*	ND	
	Chloroethane	ND		cis-1,3-Dichloropropene	*	ND	
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND		
	Trichlorofluoromethane	ND		Bromoform	ND		
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	#	ND	
	1,1-Dichloroethane	ND		Tetrachloroethylene	#	ND	
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND		
	Chloroform	ND		1,3-Dichlorobenzene	ND		
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND		
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND		
	Carbon Tetrachloride	ND					
	Bromodichloromethane	ND					
	1,2-Dichloropropane	ND					
	trans-1,3-Dichloropropene	ND					

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RECEIVED: 08/03/84

Analytical Serv

REPORT

Results by Sample

LAB # 84-08-031

Continued From Above

SAMPLE ID RB-24-1

FRACTION O1C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/02/84

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram

All results reported in ug/L unless otherwise specified.

ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).

*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.

#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

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RECEIVED: 08/03/84

Analytical Serv

REPORT

LAB # 84-08-031

Results by Sample

SAMPLE ID RB-24-2, 105-110

SAMPLE # 02 FRACTIONS: A, B, C, D

Date & Time Collected 08/02/84

Category

CA E	19	CL IC	21	CO3 A	<1	FE E	8.4	HCO3 A	98	MG E	16
	ug/ml		mg/L	mg/L as CaCO3			ug/ml	mg/L as CaCO3			ug/ml

NA E	22	SO4 IC	7
	ug/ml		mg/L

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Analytical Serv

REPORT

LAB # 84-08-031

RECEIVED: 08/03/84

Results by Sample

SAMPLE ID RB-24-2, 105-110

FRACTION 02C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/02/84

Category

DATA FILE _____ B _____ DATE INJECTED 08/10/84 ANALYST _____ MCL _____ VERIFIED BY JSQ
CONC. FACTOR _____ INSTRUMENT _____ B _____ COMPOUNDS DETECTED 1

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Chloromethane	ND	_____	Trichloroethene	ND
_____	Bromomethane	ND	_____	Dibromochloromethane *	ND
_____	Vinyl Chloride	ND	_____	1,1,2-Trichloroethane *	ND
_____	Chloroethane	ND	_____	cis-1,3-Dichloropropene *	ND
_____	Methylene Chloride	ND	_____	2-Chloroethylvinyl Ether	ND
1	Trichlorofluoromethane	0.4	_____	Bromoform	ND
_____	1,1-Dichloroethene	ND	_____	1,1,2,2-Tetrachloroethane #	ND
_____	1,1-Dichloroethane	ND	_____	Tetrachloroethylene #	ND
_____	trans-1,2-Dichloroethene	ND	_____	Chlorobenzene	ND
_____	Chloroform	ND	_____	1,3-Dichlorobenzene	ND
_____	1,2-Dichloroethane	ND	_____	1,2-Dichlorobenzene	ND
_____	1,1,1-Trichloroethane	ND	_____	1,4-Dichlorobenzene	ND
_____	Carbon Tetrachloride	ND			
_____	Bromodichloromethane	ND			
_____	1,2-Dichloropropene	ND			
_____	trans-1,3-Dichloropropene	ND			

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RECEIVED: 08/03/84

Analytical Serv

REPORT

Results by Sample

LAB # 84-08-031

Continued From Above

SAMPLE ID RB-24-2, 105-110

FRACTION 02C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/02/84

Category _____

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/L unless otherwise specified.

ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).

*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.

#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

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RECEIVED: 08/03/84

Analytical Serv

REPORT

LAB # 84-08-031

Results by Sample

SAMPLE ID RB-24-3, 120-130		SAMPLE # 03		FRACTIONS: A, B, C, D	
Date & Time Collected 08/02/84		Category			
CA E	19 CL IC ug/ml	20 CO3 A mg/L	<1 FE E ug/ml	0.18 HCO3 A mg/L as CaCO3	<1 MG E ug/ml
NA E	22 SO4 IC ug/ml	8 mg/L			

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RECEIVED: 08/03/84

Analytical Serv

Results by Sample

REPORT

LAB # 84-08-031

SAMPLE ID RB-24-3, 120-130

FRACTION 03C

TEST CODE GC 601 NAME EPA Method 601/GC

Date & Time Collected 08/02/84

Category

DATA FILE	A	DATE INJECTED	08/10/84	ANALYST	MCL	VERIFIED BY	JSG
CONC. FACTOR				INSTRUMENT	A	COMPOUNDS DETECTED	O
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT		
	Chloromethane	ND		Trichloroethene	ND		
	Bromomethane	ND		Dibromochloromethane *	ND		
	Vinyl Chloride	ND		1,1,2-Trichloroethane *	ND		
	Chloroethane	ND		cis-1,3-Dichloropropene *	ND		
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND		
	Trichlorofluoromethane	ND		Bromoform	ND		
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane #	ND		
	1,1-Dichloroethane	ND		Tetrachloroethylene #	ND		
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND		
	Chloroform	ND		1,3-Dichlorobenzene	ND		
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND		
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND		
	Carbon Tetrachloride	ND					
	Bromodichloromethane	ND					
	1,2-Dichloropropane	ND					
	trans-1,3-Dichloropropene	ND					

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 RECEIVED: 08/03/84
 SAMPLE ID RB-24-3, 120-130
 Analytical Serv Results by Sample
 REPORT
 LAB # 84-08-031
 Continued From Above
 FRACTION 03C TEST CODE GC 601 NAME EPA Method 601/GC
 Date & Time Collected 08/02/84 Category _____

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
 All results reported in ug/L unless otherwise specified.
 ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
 *Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
 #1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

CORPORATION

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RECEIVED: 09/04/84

Analytical Serv

REPORT

LAB # 84-09-012

09/26/84 11:26:07

REPORT Radian

TO B1 4

Austin

or Sacramento

Wayne Pearce

ATTEN

CLIENT MCCLELLAN AFB

COMPANY McClellan AFB

FACILITY

SAMPLES 3

WORK ID Recon Boring

TAKEN 9/1/84

TRANS hand carried

TYPE H2O

P.O. # 212-027-16

INVOICE under separate cover

PREPARED Radian Analytical Services

BY 8501 MoPac Blvd.

P.O. Box 9948

Austin, Texas 78766

ATTEN

PHONE (512) 454-4797

CONTACT CONOVER

CERTIFIED BY

please send one copy of the report to Toby Walters in Austin

* Indicates a value less than 5 times the detection limit which must be interpreted accordingly.

@ Indicates that spike recovery for this analysis on the specific matrix was not within acceptable limits indicating an interferent present.

SAMPLE IDENTIFICATION

01 RB-25-1, 140

02 RB-25-2, 160

03 RB-25-3, 190

Analytical Serv TEST CODES and NAMES used on this report

CA E	Calcium, ICPEs
CL IC	Chloride IC
CO3 A	Carbonate
FE E	Iron, ICPEs
GC 601	EPA Method 601/GC
HCO3 A	Bicarbonate
MG E	Magnesium, ICPEs
NA E	Sodium, ICPEs
SO4 IC	Sulfate IC

CORPORATION

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RECEIVED: 09/04/84

Analytical Serv

REPORT

LAB # 84-09-012

RESULTS BY TEST

RB-25-1

RB-25-2

RB-25-3

TEST CODE	Sample 01	Sample 02	Sample 03
default units	(entered units)	(entered units)	(entered units)
CAL E	23	110	24
ug/ml			
CL IC	13	15	14
mg/L			
CO3 A	<1	<1	<1
mg/L as CaCO3			
FE E	28	81	4.1
ug/ml			
HCO3 A	89	78	90
mg/L as CaCO3			
MG E	22	61	18
ug/ml			
NA E	18	26	20
ug/ml			
SO4 IC	12	350	76
mg/L			

CORPORATION

PAGE 3

RECEIVED: 09/04/84

Analytical Serv

REPORT

LAB # 84-09-012

Results by Sample

SAMPLE ID RB-25-1, 140

FRACTION Q1C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 09/01/84

Category

DATA FILE	A	DATE INJECTED	09/07/84	ANALYST	KS	VERIFIED BY	JSG
CONC. FACTOR				INSTRUMENT	A	COMPOUNDS DETECTED	0
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT		
	Chloromethane	ND		Trichloroethene	ND		
	Bromomethane	ND		Dibromochloromethane	*	ND	
	Vinyl Chloride	ND		1,1,2-Trichloroethane	*	ND	
	Chloroethane	ND		cis-1,3-Dichloropropene	*	ND	
	Methylene Chloride	ND		2-Chloroethylvinyl Ether		ND	
	Trichlorofluoromethane	ND		Bromoform		ND	
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	#	ND	
	1,1-Dichloroethane	ND		Tetrachloroethylene	#	ND	
	trans-1,2-Dichloroethene	ND		Chlorobenzene		ND	
	Chloroform	ND		1,3-Dichlorobenzene		ND	
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene		ND	
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene		ND	
	Carbon Tetrachloride	ND					
	Bromodichloromethane	ND					
	1,2-Dichloropropane	ND					
	trans-1,3-Dichloropropene	ND					

CORPORATION

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RECEIVED: 09/04/84

Analytical Serv

REPORT

Results by Sample

LAB # 84-09-012

Continued From Above

SAMPLE ID RB-25-1, 140

FRACTION Q1C TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 09/01/84

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/L unless otherwise specified.

ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).

*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.

#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

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Analytical Serv

REPORT

LAB # 84-09-012

RECEIVED: 09/04/84

Results by Sample

SAMPLE ID R8-25-2, 160

FRACTION 02C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 09/01/84

Category

DATA FILE _____ A
CONC. FACTOR _____

DATE INJECTED 09/07/84

ANALYST _____
INSTRUMENT _____ AVERIFIED BY JSG
COMPOUNDS DETECTED 1

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Chloromethane	ND	_____	Trichloroethene	ND
_____	Bromomethane	ND	_____	Dibromochloromethane *	ND
_____	Vinyl Chloride	ND	_____	1,1,2-Trichloroethane *	ND
_____	Chloroethane	ND	_____	cis-1,3-Dichloropropene *	ND
_____	Methylene Chloride	ND	_____	2-Chloroethylvinyl Ether	ND
1	Trichlorofluoromethane	0.3	_____	Bromoform	ND
_____	1,1-Dichloroethene	ND	_____	1,1,2,2-Tetrachloroethane #	ND
_____	1,1-Dichloroethane	ND	_____	Tetrachloroethylene #	ND
_____	trans-1,2-Dichloroethene	ND	_____	Chlorobenzene	ND
_____	Chloroform	ND	_____	1,3-Dichlorobenzene	ND
_____	1,2-Dichloroethane	ND	_____	1,2-Dichlorobenzene	ND
_____	1,1,1-Trichloroethane	ND	_____	1,4-Dichlorobenzene	ND
_____	Carbon Tetrachloride	ND			
_____	Bromodichloromethane	ND			
_____	1,2-Dichloropropane	ND			
_____	trans-1,3-Dichloropropene	ND			

CORPORATION

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RECEIVED: 09/04/84

Analytical Serv

REPORT

LAB # 84-09-012

Results by Sample

Continued From Above

SAMPLE ID RB-25-2, 160

FRACTION 02C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 09/01/84

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/L unless otherwise specified.

ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).

*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.

#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

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RECEIVED: 09/04/84

Analytical Serv

REPORT

Results by Sample

LAB # 84-09-012

SAMPLE ID RB-25-3, 190

FRACTION Q3C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 09/01/84

Category

DATA FILE	A	DATE INJECTED	09/07/84	ANALYST	KS	VERIFIED BY	JSG
CONC. FACTOR				INSTRUMENT	A	COMPOUNDS DETECTED	0
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT		
	Chloromethane	ND		Trichloroethene	ND		
	Bromomethane	ND		Dibromochloromethane	*	ND	
	Vinyl Chloride	ND		1,1,2-Trichloroethane	*	ND	
	Chloroethane	ND		cis-1,3-Dichloropropene	*	ND	
	Methylene Chloride	ND		2-Chloroethylvinyl Ether		ND	
	Trichlorofluoromethane	ND		Bromoform		ND	
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	#	ND	
	1,1-Dichloroethane	ND		Tetrachloroethylene	#	ND	
	trans-1,2-Dichloroethene	ND		Chlorobenzene		ND	
	Chloroform	ND		1,3-Dichlorobenzene		ND	
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene		ND	
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene		ND	
	Carbon Tetrachloride	ND					
	Bromodichloromethane	ND					
	1,2-Dichloropropane	ND					
	trans-1,3-Dichloropropene	ND					

CORPORATION

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RECEIVED: 09/04/84

Analytical Serv

REPORT

Results by Sample

LAB # 84-09-012

Continued From Above

SAMPLE ID RB-25-3, 190

FRACTION 03C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 09/01/84

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/L unless otherwise specified.

ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).

*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

CORPORATION

PAGE 9

Analytical Serv

REPORT

LAB # 84-09-012

RECEIVED: 09/04/84

NonReported Work

FRACTION AND TEST CODES FOR WORK NOT REPORTED ELSEWHERE

01D : DUP601
02D : DUP601
03D : DUP601

PAGE 1

RECEIVED: 08/31/84

Analytical Serv

REPORT

LAB # 84-08-299

09/24/84 11:30:20

REPORT Radian

TO BL 4

Austin

or Sacramento

ATTEN Wayne Pearce

CLIENT MCCLELLAN AFB

COMPANY McClellan AFB

FACILITY

SAMPLES 3

PREPARED Radian Analytical Services

BY 8501 MoPac Blvd.

P.O. Box 9948

Austin, Texas 78766

ATTEN

PHONE (512) 454-4797

CERTIFIED BY

CONTACT CONOVER

please send one copy of the report to Toby Walters in Austin

WORK ID Reconn Boring

TAKEN 8/30/84

TRANS hand carried

TYPE H2O

P.O. # 212-027-16

INVOICE under separate cover

SAMPLE IDENTIFICATION

01 RB-26-1, 120

02 RB-26-2, 140

03 RB-26-3, 200

Analytical Serv TEST CODES and NAMES used on this report

CA E	Calcium, ICPEs
CL IC	Chloride IC
CO3 A	Carbonate
FE E	Iron, ICPEs
GC 601	EPA Method 601/GC
HC03 A	Bicarbonate
MG E	Magnesium, ICPEs
NA E	Sodium, ICPEs
SO4 IC	Sulfate IC

PAGE 2

RECEIVED: 08/31/84

Analytical Serv

REPORT

LAB # 84-08-299

Results by Sample

SAMPLE ID RB-26-1, 120		SAMPLE # 01		FRACTIONS: A, B, C, D	
Date & Time Collected 08/30/84		Category			
CA E	12 CL IC ug/ml	13 CO3 A mg/L	<1 FE E ug/ml	14 HCO3 A mg/L as CaCO3	67 MG E ug/ml
NA E	10 SO4 IC ug/ml	3.7 mg/L			

PAGE 3

RECEIVED: 08/31/84

Analytical Serv

REPORT

Results by Sample

LAB # 84-08-299

SAMPLE ID RB-26-1, 120

FRACTION Q1C

TEST CODE GC 601 NAME EPA Method 601/GC

Date & Time Collected 08/30/84

Category

DATA FILE	CONC. FACTOR	A	DATE INJECTED	09/05/84	ANALYST	KS	VERIFIED BY	JSG
SCN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT	COMPOUNDS DETECTED	1	
	Chloromethane	ND		Trichloroethene	ND			
	Bromomethane	ND		Dibromochloromethane	*	ND		
	Vinyl Chloride	ND		1,1,2-Trichloroethane	*	ND		
	Chloroethane	ND		cis-1,3-Dichloropropene	*	ND		
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND			
	Trichlorofluoromethane	ND		Bromoform	ND			
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	#	ND		
	1,1-Dichloroethane	ND		Tetrachloroethylene	#	ND		
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND			
	Chloroform	ND		1,3-Dichlorobenzene	ND			
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND			
1	1,1,1-Trichloroethane	0.9		1,4-Dichlorobenzene	ND			
	Carbon Tetrachloride	ND						
	Bromodichloromethane	ND						
	1,2-Dichloropropane	ND						
	trans-1,3-Dichloropropene	ND						

COMPUTATION

PAGE 4
 RECEIVED: 08/31/84
 SAMPLE ID RB-26-1, 120
 Analytical Serv
 Results by Sample
 REPORT
 LAB # 84-08-299
 Continued From Above
 FRACTION O1C
 TEST CODE GC 601
 NAME EPA Method 601/GC
 Date & Time Collected 08/30/84
 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
 All results reported in ug/L unless otherwise specified.
 ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
 *Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
 #1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

PAGE 5

RECEIVED: 08/31/84

Analytical Serv

REPORT

LAB # 84-08-299

Results by Sample

SAMPLE ID RB-26-2, 140

SAMPLE # 02 FRACTIONS: A, B, C, D

Date & Time Collected 08/30/84

Category

CA E

5.6 ug/ml

CL IC

13 mg/L

CO3 A

<1 mg/L as CaCO3

FE E

1.9 ug/ml

HCO3 A

67 mg/L as CaCO3

MG E

4.1 ug/ml

NA E

8.5 ug/ml

SO4 IC

3.9 mg/L

PAGE 6

RECEIVED: 08/31/84

Analytical Serv

REPORT

LAB # 84-08-299

Results by Sample

SAMPLE ID RB-26-2, 140

FRACTION 02C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/30/84

Category

DATA FILE	B	DATE INJECTED	09/05/84	ANALYST	KS	VERIFIED BY	JSG
CONC. FACTOR				INSTRUMENT	B	COMPOUNDS DETECTED	1
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT	COMPOUND	RESULT
	Chloromethane	ND				Trichloroethene	ND
	Bromomethane	ND				Dibromochloromethane *	ND
	Vinyl Chloride	ND				1,1,2-Trichloroethane *	ND
	Chloroethane	ND				cis-1,3-Dichloropropene *	ND
	Methylene Chloride	ND				2-Chloroethylvinyl Ether	ND
1	Trichlorofluoromethane	2.2				Bromoform	ND
	1,1-Dichloroethene	ND				1,1,2,2-Tetrachloroethane #	ND
	1,1-Dichloroethane	ND				Tetrachloroethylene #	ND
	trans-1,2-Dichloroethene	ND				Chlorobenzene	ND
	Chloroform	ND				1,3-Dichlorobenzene	ND
	1,2-Dichloroethane	ND				1,2-Dichlorobenzene	ND
	1,1,1-Trichloroethane	ND				1,4-Dichlorobenzene	ND
	Carbon Tetrachloride	ND					
	Bromodichloromethane	ND					
	1,2-Dichloropropane	ND					
	trans-1,3-Dichloropropene	ND					

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RECEIVED: 08/31/84

Analytical Serv

REPORT

LAB # 84-08-299

Results by Sample

Continued From Above

SAMPLE ID RB-26-2, 140

FRACTION 02C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/30/84

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/L unless otherwise specified.

ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).

*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.

#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

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RECEIVED: 08/31/84

Analytical Serv

REPORT

LAB # 84-08-299

Results by Sample

SAMPLE ID RB-26-3, 200

SAMPLE # 03 FRACTIONS: A, B, C, D

Date & Time Collected 08/30/84

Category

CA E 8.7 CL IC 14

ug/ml

mg/L

CO3 A

mg/L as CaCO3

<1 FE E

ug/ml

0.35 HCO3 A

mg/L as CaCO3

86 MG E

ug/ml

NA E 10 SO4 IC 6.3

ug/ml

mg/L

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Analytical Serv

REPORT

LAB # 84-08-299

RECEIVED: 08/31/84

Results by Sample

SAMPLE ID RB-26-3, 200

FRACTION Q3C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/30/84

Category

DATA FILE	CONC. FACTOR	A	DATE INJECTED	09/05/84	ANALYST	KS	VERIFIED BY	JSG
SCN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT	COMPOUNDS DETECTED	2	
	Chloromethane	ND		Trichloroethene	ND			
	Bromomethane	ND		Dibromochloromethane	*	ND		
	Vinyl Chloride	ND		1,1,2-Trichloroethane	*	ND		
	Chloroethane	ND		cis-1,3-Dichloropropene	*	ND		
	Methylene Chloride	ND		2-Chloroethylvinyl Ether		ND		
	Trichlorofluoromethane	ND		Bromoform		ND		
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	#	ND		
	1,1-Dichloroethane	ND		Tetrachloroethylene	#	ND		
	trans-1,2-Dichloroethene	ND	2	Chlorobenzene	0.4			
	Chloroform	ND		1,3-Dichlorobenzene		ND		
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene		ND		
1	1,1,1-Trichloroethane	0.9		1,4-Dichlorobenzene		ND		
	Carbon Tetrachloride	ND						
	Bromodichloromethane	ND						
	1,2-Dichloropropane	ND						
	trans-1,3-Dichloropropene	ND						

COMPUTATION

PAGE 10

RECEIVED: 08/31/84

Analytical Serv

REPORT

Results by Sample

LAB # 84-08-299

Continued From Above

SAMPLE ID RB-26-3, 200

FRACTION Q3C TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 08/30/84

Category

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.

All results reported in ug/L unless otherwise specified.

ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).

*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.

#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

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RECEIVED: 08/31/84

Analytical Serv

REPORT

LAB # 84-08-299

NonReported Work

FRACTION AND TEST CODES FOR WORK NOT REPORTED ELSEWHERE

01D : DUP601
02D : DUP601
03D : DUP601

CORPORATION

PAGE 1

RECEIVED 09/07/84

Analytical Serv

REPORT

LAB # 84-09-050

09/26/84 11:22:17

REPORT Radian

TO

BI 4

Austin

or Sacramento

Wayne Pearce

ATTEN

CLIENT

MCLELLAN AF

COMPANY

McClellan AFB

FACILITY

SAMPLES 2

WORK ID Reconnaissance Boring

TAKEN 9/6/84

TRANS hand carried

TYPE H2O

P.O. # 212-027-16

INVOICE under separate cover

PREPARED Radian Analytical Services

BY 8501 MoPac Blvd.

P.O. Box 9948

Austin, Texas 78766

ATTEN

PHONE (512) 454-4797

CONTACT CONOVER

CERTIFIED BY

please send one copy of the report to Toby Walters in Austin
2nd column confirmation performed on split Q2C.

* Indicates a value less than 5 times the detection limit
which must be interpreted accordingly.

@ Indicates that spike recovery for this analysis on the
specific matrix was not within acceptable limits indicating
an interferent present.

SAMPLE IDENTIFICATION

01 RB-27-1, 150-160

02 RB-27-2, 180-190

Analytical Serv TEST CODES and NAMES used on this report

CA E	Calcium, ICPEs
CL IC	Chloride IC
CO3 A	Carbonate
FE E	Iron, ICPEs
GC 601	EPA Method 601/GC
HC03 A	Bicarbonate
MG E	Magnesium, ICPEs
NA E	Sodium, ICPEs
SO4 IC	Sulfate IC

CORPORATION

PAGE 2

RECEIVED: 09/07/84

Analytical Serv

REPORT

LAB # 84-09-050

RESULTS BY TEST

RB-27-1 RB-27-2

Sample 01 Sample 02

TEST CODE

default units

(entered units) (entered units)

CA_E

ug/ml

19

16

CL_IC

mg/L

44

14

CO3_A

mg/L as CaCO3

<1

<1

FE_E

ug/ml

2.1

1.6

HCO3_A

mg/L as CaCO3

112

99

MG_E

ug/ml

15

13

NA_E

ug/ml

17

16

SO4_IC

mg/L

7

2

PAGE 3

Analytical Serv

REPORT

LAB # 84-09-050

RECEIVED 09/07/84

Results by Sample

SAMPLE ID RB-27-1, 150-160

FRACTION OIC

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 09/06/84

Category

DATA FILE _____ A _____ DATE INJECTED 09/11/84 ANALYST _____ RAA _____ VERIFIED BY JSG
CONC FACTOR _____ COMPOUNDS DETECTED 1

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Chloromethane	ND	_____	Trichloroethene	ND
_____	Bromomethane	ND	_____	Dibromochloromethane *	ND
_____	Vinyl Chloride	ND	_____	1,1,2-Trichloroethane *	ND
_____	Chloroethane	ND	_____	cis-1,3-Dichloropropene *	ND
_____	Methylene Chloride	ND	_____	2-Chloroethylvinyl Ether	ND
1	Trichlorofluoromethane	1.9	_____	Bromoform	ND
_____	1,1-Dichloroethene	ND	_____	1,1,2,2-Tetrachloroethane #	ND
_____	1,1-Dichloroethane	ND	_____	Tetrachloroethylene #	ND
_____	trans-1,2-Dichloroethene	ND	_____	Chlorobenzene	ND
_____	Chloroform	ND	_____	1,3-Dichlorobenzene	ND
_____	1,2-Dichloroethane	ND	_____	1,2-Dichlorobenzene	ND
_____	1,1,1-Trichloroethane	ND	_____	1,4-Dichlorobenzene	ND
_____	Carbon Tetrachloride	ND			
_____	Bromodichloromethane	ND			
_____	1,2-Dichloropropane	ND			
_____	trans-1,3-Dichloropropene	ND			

CORPORATION

PAGE 4

RECEIVED: 09/07/84

Analytical Serv

REPORT

LAB # 84-09-050

Results by Sample

Continued From Above

SAMPLE ID RB-27-1, 150-160

FRACTION O1C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 09/06/84

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/L unless otherwise specified.

ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).

*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

PAGE 5

RECEIVED: 09/07/84

Analytical Serv

REPORT

LAB # 84-09-050

Results by Sample

SAMPLE ID RB-27-2, 180-190

FRACTION 02C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 09/06/84

Category

DATA FILE	DATE INJECTED	ANALYST	VERIFIED BY
CONC. FACTOR	A	INSTRUMENT	KS
			COMPOUNDS DETECTED 3
SCAN	COMPOUND	RESULT	SCAN
	Chloromethane	ND	
	Bromomethane	ND	
	Vinyl Chloride	ND	
	Chloroethane	ND	
	Methylene Chloride	ND	
1	Trichlorofluoromethane	0.6	
	1,1-Dichloroethane	ND	
	1,1-Dichloroethane	ND	
	trans-1,2-Dichloroethane	ND	
	Chloroform	ND	
2	1,2-Dichloroethane	0.6	
	1,1,1-Trichloroethane	ND	
	Carbon Tetrachloride	ND	
3	Bromodichloromethane	0.2	
	1,2-Dichloropropane	ND	
	trans-1,3-Dichloropropene	ND	
	Chloromethane	ND	
	1,3-Dichlorobenzene	ND	
	1,2-Dichlorobenzene	ND	
	1,4-Dichlorobenzene	ND	
	Trichloroethene	ND	
	Dibromochloromethane *	ND	
	1,1,2-Trichloroethane *	ND	
	cis-1,3-Dichloropropene *	ND	
	2-Chloroethylvinyl Ether	ND	
	Bromoform	ND	
	1,1,2,2-Tetrachloroethane #	ND	
	Tetrachloroethylene #	ND	
	Chlorobenzene	ND	
	1,3-Dichlorobenzene	ND	
	1,2-Dichlorobenzene	ND	
	1,4-Dichlorobenzene	ND	

CORPORATION

PAGE 6

RECEIVED: 09/07/84

Analytical Serv

REPORT

LAB # 84-09-050

Results by Sample

Continued From Above

SAMPLE ID RB-27-2, 180-190

FRACTION 02C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 09/06/84

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/L unless otherwise specified.

ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).

*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

CORPORATION

PAGE 7

RECEIVED: 09/07/84

Analytical Serv

REPORT

NonReported Work

LAB # 84-09-050

FRACTION AND TEST CODES FOR WORK NOT REPORTED ELSEWHERE

01D : DUP601
02D : DUP601

CORPORATION

PAGE 1

RECEIVED: 09/05/84

Analytical Serv

REPORT

LAB # 84-09-023

09/26/84 09:31:43

REPORT Radian

TO

Bl. 4

Austin

or Sacramento

Wayne Pearce

ATTN

CLIENT MCCLELLAN AF

COMPANY McClellan AFB

FACILITY

SAMPLES 3

WORK ID Recon Boring

TAKEN 9/4/84

TRANS hand carried

TYPE H2O

P.O. # 212-027-16

INVOICE under separate cover

PREPARED Radian Analytical Services

BY 8501 MoPac Blvd.

P.O. Box 9948

Austin, Texas 78766

ATTN

PHONE (512) 454-4797

CERTIFIED BY

CONTACT CONOVER

please send one copy of the report to Toby Walters in Austin

* Indicates a value less than 5 times the detection limit which must be interpreted accordingly.

@ Indicates that spike recovery for this analysis on the specific matrix was not within acceptable limits indicating an interferent present.

SAMPLE IDENTIFICATION

01 RB-28-1, 120
02 RB-28-2, 160
03 RB-28-3, 180

Analytical Serv TEST CODES and NAMES used on this report

CA E Calcium, ICPEs
CL IC Chloride IC
CO3 A Carbonate
FE E Iron, ICPEs
GC 601 EPA Method 601/GC
HCO3 A Bicarbonate
MG E Magnesium, ICPEs
NA E Sodium, ICPEs
SO4 IC Sulfate IC

CORPORATION

PAGE 2

RECEIVED: 09/05/84

Analytical Serv

REPORT

LAB # 84-09-023

RESULTS BY TFST

RB-28-1

RB-28-2

RB-28-3

TEST CODE	Sample 01	Sample 02	Sample 03
default units	(entered units)	(entered units)	(entered units)
CA_E	22	15	19
ug/ml			
CL_IC	18	13	13
mg/L			
CO3_A	<1	<1	<1
mg/L as CaCO3			
FE_E	1.2	2.3	5.7
ug/ml			
HCO3_A	116	109	112
mg/L as CaCO3			
MG_E	14	10	14
ug/ml			
NA_E	18	16	18
ug/ml			
SO4_IC	4.8	3.2	3.4
mg/L			

PAGE 3

RECEIVED: 09/05/84

Analytical Serv

REPORT

LAB # 84-09-023

Results by Sample

SAMPLE ID RB-28-1, 120

FRACTION OIC

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 09/04/84

Category

DATA FILE _____
CONC. FACTOR _____

DATE INJECTED 09/10/84

ANALYST _____
INSTRUMENT _____VERIFIED BY JSG
COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Chloromethane	ND	_____	Trichloroethene	ND
_____	Bromomethane	ND	_____	Dibromochloromethane *	ND
_____	Vinyl Chloride	ND	_____	1,1,2-Trichloroethane *	ND
_____	Chloroethane	ND	_____	cis-1,3-Dichloropropene *	ND
_____	Methylene Chloride	ND	_____	2-Chloroethylvinyl Ether	ND
_____	Trichlorofluoromethane	ND	_____	Bromoform	ND
_____	1,1-Dichloroethene	ND	_____	1,1,2,2-Tetrachloroethane #	ND
_____	1,1-Dichloroethane	ND	_____	Tetrachloroethylene #	ND
_____	trans-1,2-Dichloroethene	ND	_____	Chlorobenzene	ND
_____	Chloroform	ND	_____	1,3-Dichlorobenzene	ND
_____	1,2-Dichloroethane	ND	_____	1,2-Dichlorobenzene	ND
_____	1,1,1-Trichloroethane	ND	_____	1,4-Dichlorobenzene	ND
_____	Carbon Tetrachloride	ND			
_____	Bromodichloromethane	ND			
_____	1,2-Dichloropropane	ND			
_____	trans-1,3-Dichloropropene	ND			

CORPORATION

PAGE 4

RECEIVED: 09/05/84

Analytical Serv

REPORT

LAB # 84-09-023

Results by Sample

Continued From Above

SAMPLE ID R8-28-1, 120

FRACTION O1C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 09/04/84

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/L unless otherwise specified.

ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).

*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

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RECEIVED: 09/05/84

Analytical Serv

REPORT

LAB # 84-09-023

Results by Sample

SAMPLE ID RB-28-2, 160

FRACTION 02C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 09/04/84

Category

DATA FILE	A	DATE INJECTED	09/10/84	ANALYST	RAA	VERIFIED BY	JSG
CONC. FACTOR				INSTRUMENT	a	COMPOUNDS DETECTED	Q
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT		
	Chloromethane	ND		Trichloroethene	ND		
	Bromomethane	ND		Dibromochloromethane	*	ND	
	Vinyl Chloride	ND		1,1,2-Trichloroethane	*	ND	
	Chloroethane	ND		cis-1,3-Dichloropropene	*	ND	
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND		
	Trichlorofluoromethane	ND		Bromoform	ND		
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	#	ND	
	1,1-Dichloroethane	ND		Tetrachloroethylene	#	ND	
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND		
	Chloroform	ND		1,3-Dichlorobenzene	ND		
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND		
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND		
	Carbon Tetrachloride	ND					
	Bromodichloromethane	ND					
	1,2-Dichloropropane	ND					
	trans-1,3-Dichloropropene	ND					

CORPORATION

PAGE 6

RECEIVED: 09/05/84

Analytical Serv

REPORT

Results by Sample

LAB # 84-09-023

Continued From Above

SAMPLE ID RB-28-2, 160

FRACTION 02C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 09/04/84

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/L unless otherwise specified.

ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).

*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

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RECEIVED: 09/05/84

Analytical Serv

REPORT

LAB # 84-09-023

Results by Sample

SAMPLE ID RB-28-3, 180

FRACTION 03C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 09/04/84

Category

DATA FILE _____
CONC. FACTOR _____

A

DATE INJECTED 09/10/84

ANALYST _____
INSTRUMENT _____RAA _____
aVERIFIED BY JSG
COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Chloromethane	ND	_____	Trichloroethene	ND
_____	Bromomethane	ND	_____	Dibromochloromethane *	ND
_____	Vinyl Chloride	ND	_____	1,1,2-Trichloroethane *	ND
_____	Chloroethane	ND	_____	cis-1,3-Dichloropropene *	ND
_____	Methylene Chloride	ND	_____	2-Chloroethylvinyl Ether	ND
_____	Trichlorofluoromethane	ND	_____	Bromoform	ND
_____	1,1-Dichloroethene	ND	_____	1,1,2,2-Tetrachloroethane #	ND
_____	1,1-Dichloroethane	ND	_____	Tetrachloroethylene #	ND
_____	trans-1,2-Dichloroethene	ND	_____	Chlorobenzene	ND
_____	Chloroform	ND	_____	1,3-Dichlorobenzene	ND
_____	1,2-Dichloroethane	ND	_____	1,2-Dichlorobenzene	ND
_____	1,1,1-Trichloroethane	ND	_____	1,4-Dichlorobenzene	ND
_____	Carbon Tetrachloride	ND			
_____	Bromodichloromethane	ND			
_____	1,2-Dichloropropane	ND			
_____	trans-1,3-Dichloropropene	ND			

CORPORATION

PAGE 8

RECEIVED: 09/05/84

Analytical Serv

Results by Sample

REPORT

LAB # 84-09-023

Continued From Above

SAMPLE ID RB-28-3, 180

FRACTION 03C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 09/04/84

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/L unless otherwise specified.

ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).

*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.

#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

CORPORATION

PAGE 9

RECEIVED: 09/05/84

Analytical Serv

REPORT

LAB # 84-09-023

NonReported Work

FRACTION AND TEST CODES FOR WORK NOT REPORTED ELSEWHERE

01D : DUP601
02D : DUP601
03D : DUP601

PAGE 1

RECEIVED: 09/05/84

Analytical Serv

REPORT

LAB # 84-09-020

09/24/84 11:35:28

REPORT Radian

TO B1 4

Austin

or Sacramento

ATTEN Wayne Pearce

CLIENT MCCLELLAN AF

COMPANY McClellan AFB

FACILITY

SAMPLES 2

WORK ID Reconn Boring

TAKEN 8/4/84

TRANS hand carried

TYPE H2O

P O # 212-027-16

INVOICE under separate cover

PREPARED Radian Analytical Services

BY 8501 MoPac Blvd

P O Box 9948

Austin, Texas 78766

ATTEN

PHONE (512) 454-4797

CERTIFIED BY

CONTACT CONOVER

please send one copy of the report to Toby Walters in Austin

SAMPLE IDENTIFICATION

01 RB-29-1, 135-145

02 RB-29-2, 150-160

Analytical Serv TEST CODES and NAMES used on this report

CA E	Calcium, ICPEs
CL IC	Chloride IC
CO3 A	Carbonate
FE E	Iron, ICPEs
GC 601	EPA Method 601/GC
HCO3 A	Bicarbonate
MG E	Magnesium, ICPEs
NA E	Sodium, ICPEs
SO4 IC	Sulfate IC

CORPORATION

PAGE 2
 RECEIVED: 09/05/84
 Analytical Serv
 Results by Sample

REPORT

LAB # 84-09-020

SAMPLE ID RB-29-1, 135-145

SAMPLE # 01 FRACTIONS: A,B,C,D

Date & Time Collected 09/04/84

Category

CA E 22 CL IC 20 CO3 A 1.2 HCO3 A 100 MG E 17
 ug/ml mg/L ug/ml mg/L as CaCO3 ug/ml

NA E 18 SO4 IC 6.2
 ug/ml mg/L

PAGE 3

RECEIVED: 09/05/84

Analytical Serv

REPORT

LAB # 84-09-020

Results by Sample

SAMPLE ID RB-29-1, 135-145

FRACTION OIC

TEST CODE GC 601 NAME EPA Method 601/GC

Date & Time Collected 09/04/84

Category

DATA FILE	CONC. FACTOR	A	DATE INJECTED	09/07/84	ANALYST	KS	INSTRUMENT	A	COMPOUNDS DETECTED	Q	VERIFIED BY	JSG
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT							
	Chloromethane	ND		Trichloroethene	ND							
	Bromomethane	ND		Dibromochloromethane	*	ND						
	Vinyl Chloride	ND		1,1,2-Trichloroethane	*	ND						
	Chloroethane	ND		cis-1,3-Dichloropropene	*	ND						
	Methylene Chloride	ND		2-Chloroethylvinyl Ether		ND						
	Trichlorofluoromethane	ND		Bromoform		ND						
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	#	ND						
	1,1-Dichloroethane	ND		Tetrachloroethylene	#	ND						
	trans-1,2-Dichloroethene	ND		Chlorobenzene		ND						
	Chloroform	ND		1,3-Dichlorobenzene		ND						
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene		ND						
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene		ND						
	Carbon Tetrachloride	ND										
	Bromodichloromethane	ND										
	1,2-Dichloropropane	ND										
	trans-1,3-Dichloropropene	ND										

CORPORATION

PAGE 4

RECEIVED: 09/05/84

Analytical Serv

REPORT

Results by Sample

LAB # 84-09-020

Continued From Above

SAMPLE ID RB-29-1, 135-145

FRACTION O1C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 09/04/84

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/L unless otherwise specified.

ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).

*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

CORPORATION

PAGE 5

RECEIVED: 09/05/84

Analytical Serv

REPORT

LAB # 84-09-020

Results by Sample

SAMPLE ID RB-29-2, 150-160

SAMPLE # 02 FRACTIONS: A,B,C,D

Date & Time Collected 09/04/84

Category

CA E 19 CL IC 20 CO3 A <1 FE E 1.3 HCO3 A 122 MG E 14
ug/ml mg/L mg/L as CaCO3 ug/ml mg/L as CaCO3 ug/ml

NA E 17 SO4 IC 5.1
ug/ml mg/L

PAGE 6

RECEIVED: 09/05/84

Analytical Serv

REPORT

LAB # 84-09-020

Results by Sample

SAMPLE ID RB-29-2, 150-160

FRACTION 02C

TEST CODE GC 601 NAME EPA Method 601/GC

Date & Time Collected 09/04/84

Category

DATA FILE	A	DATE INJECTED	09/10/84	ANALYST	MCL	VERIFIED BY	JSG
CONC. FACTOR				INSTRUMENT	A	COMPOUNDS DETECTED	2
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT		
	Chloromethane	ND		Trichloroethene	ND		
	Bromomethane	ND		Dibromochloromethane *	ND		
	Vinyl Chloride	ND		1,1,2-Trichloroethane *	ND		
	Chloroethane	ND		cis-1,3-Dichloropropene *	ND		
1	Methylene Chloride	1.1		2-Chloroethylvinyl Ether	ND		
2	Trichlorofluoromethane	0.8		Bromoform	ND		
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane #	ND		
	1,1-Dichloroethane	ND		Tetrachloroethylene #	ND		
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND		
	Chloroform	ND		1,3-Dichlorobenzene	ND		
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND		
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND		
	Carbon Tetrachloride	ND					
	Bromodichloromethane	ND					
	1,2-Dichloropropane	ND					
	trans-1,3-Dichloropropene	ND					

CORPORATION

PAGE 7

RECEIVED: 09/05/84

Analytical Serv

Results by Sample

REPORT

LAB # 84-09-020

Continued From Above

SAMPLE ID RB-29-2, 150-160

FRACTION 02C

TEST CODE GC 601

NAME EPA Method 601/GC

Date & Time Collected 09/04/84

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

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ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).

*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.

#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

CORPORATION

PAGE 8

RECEIVED: 09/05/84

Analytical Serv

REPORT

LAB # 84-09-020

NonReported Work

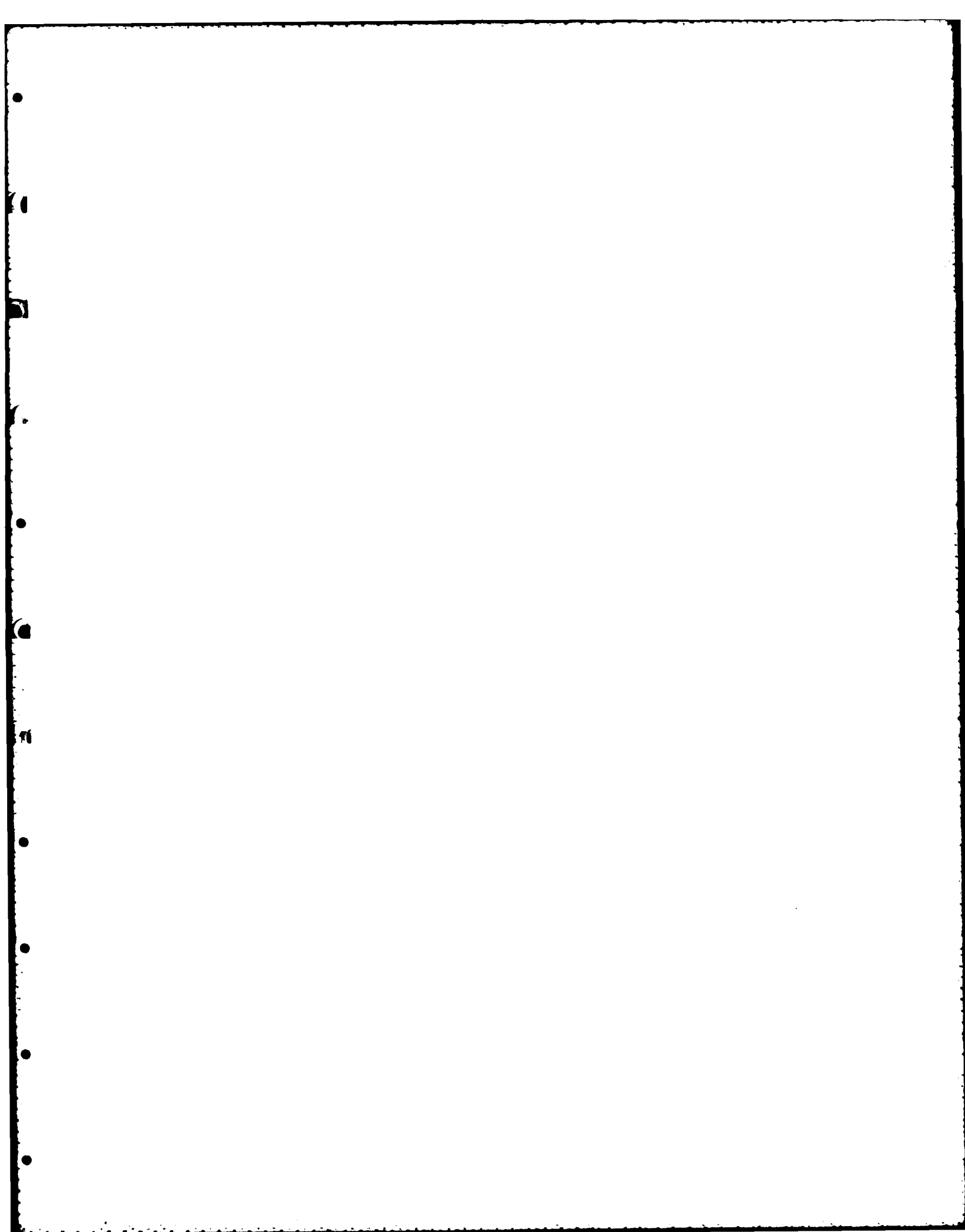
FRACTION AND TEST CODES FOR WORK NOT REPORTED ELSEWHERE

01D : DUP601

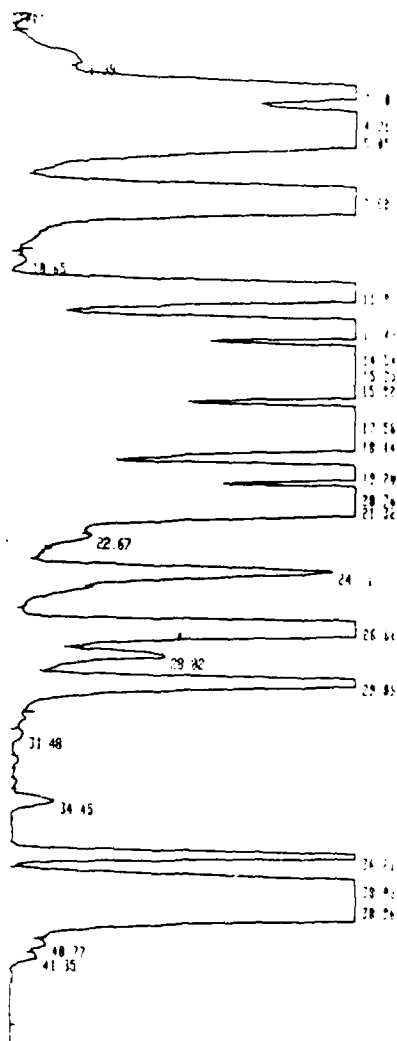
02D : DUP601

APPENDIX 5-F

Raw Laboratory Data for Selected Water Samples
(Volatile Organic Analysis - EPA 601)



24.57 10.4 601 W 20



STOP

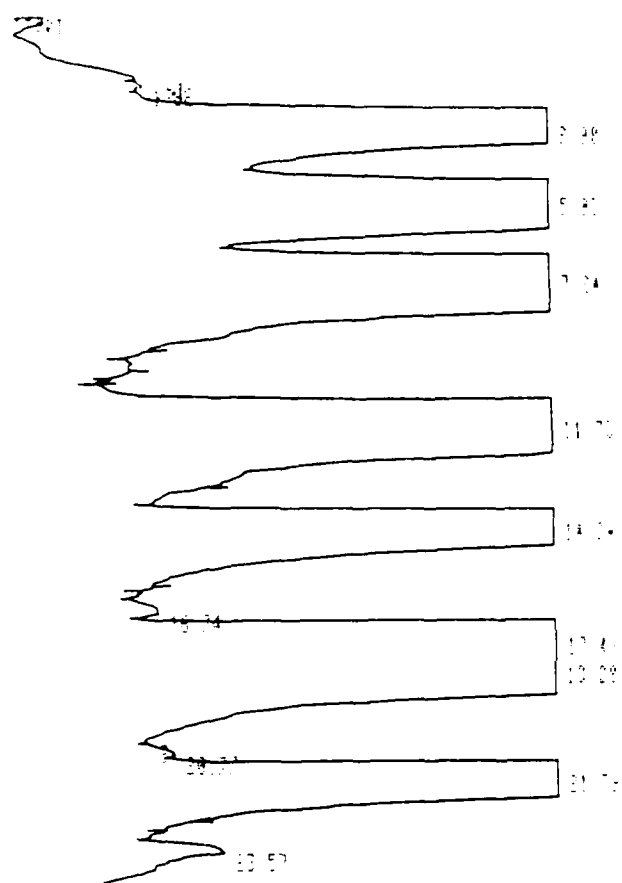
RUN # 554

SLP/24/84 10 20 10

AREA%	RT	AREA	TYPE	AMT	WGT
1.99	1208700	BV	1.99	1.99	1.99
3.10	1001E+07	VV	0.809	0.809	0.809
4.26	9721100	VV	0.791	0.791	0.791
5.05	5074E+07	VV	0.839	0.839	0.839
7.68	2.4514E+07	VB	1.065	1.065	1.065
10.65	28008	VP	0.385	0.385	0.385
11.87	1.7407E+07	PV	0.258	0.258	0.258
13.43	1.9407E+07	VV	0.646	0.646	0.646
14.54	1.2872E+07	VV	0.442	0.442	0.442
15.25	5.7024E+07	VV	0.672	0.672	0.672
15.92	2.5127E+07	VV	0.411	0.411	0.411
17.58	3.5642E+07	VV	0.321	0.321	0.321
18.44	1.3672E+07	VV	0.622	0.622	0.622
19.88	1.3949E+07	VV	0.570	0.570	0.570
20.16	1.2092E+07	VV	0.508	0.508	0.508
21.72	1.2725E+07	VV	0.614	0.614	0.614
22.67	1.9551E+07	VV	0.403	0.403	0.403
24.57	4522000	VV	0.510	0.510	0.510
26.44	1.5650E+07	VV	0.506	0.506	0.506
29.82	1.9735E+07	VV	0.500	0.500	0.500
31.48	4.4206E+07	VB	0.500	0.500	0.500
34.45	1.0455E+07	BP	0.445	0.445	0.445
40.77	1.0446E+07	VV	0.502	0.502	0.502
41.35	4551200	PV	0.352	0.352	0.352
40.77	1.0446E+07	VV	0.502	0.502	0.502
41.35	4551200	PV	0.352	0.352	0.352

EPA 601
Calibration Standard
10 ppb

28 4/20/74 EPT de W/15th com Spike



A.C. Spike
10 ppb

STOP

RUN # 955 SEP 24 1974 11 30 4

RT	AREA	TYPE	HEIGHT	PERCENT
1.61	821070	SV	0.526	0.17
1.82	381000	VV	0.234	0.08
2.98	2.4331E+07	VV	0.926	0.17
5.03	3.7803E+07	VV	1.006	0.97
7.24	5.8917E+07	VB	1.048	12.17
11.35	9.2716E+07	PB	0.830	10.70
14.24	2.2971E+07	SC	0.642	1.19
15.74	130390	PP	0.747	0.003
17.47	1.0599E+08	SPH	0.582	20.76
19.28	7.7434E+07	SHR	0.823	13.34
20.77	24540	SV	1.551	0.01
21.79	5.5429E+07	VE	0.551	11.50
23.57	295170	1 PP	0.519	0.10

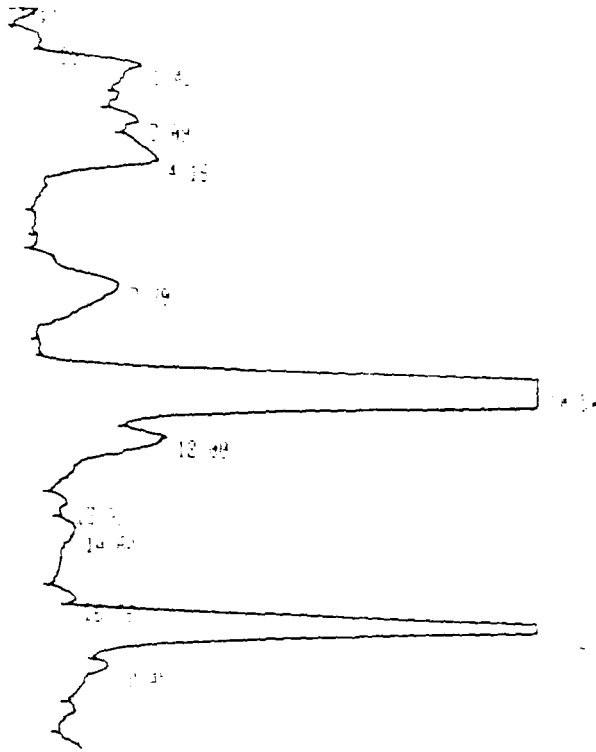
TOTAL AREA= 1.130ME+08
WUL FACTOR= 1.00ME+00

1.0524 f

8.5 64.57 100

19.5 Toluene

Spr



Second Q.C. Spike
10 ppb

STOP

9000 # 956

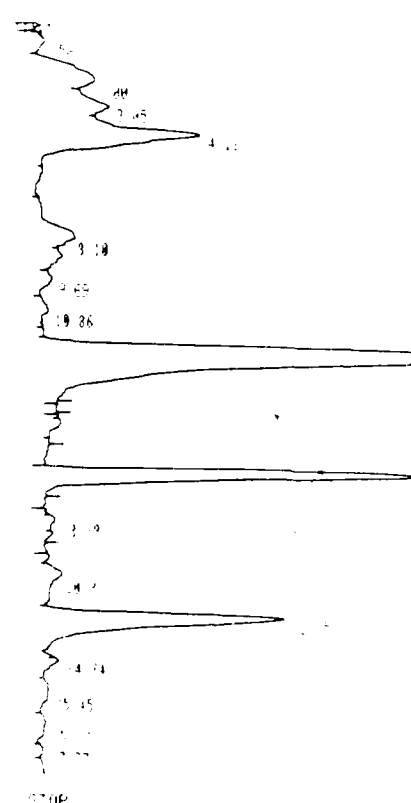
SEP 24-84 11 57 21

AREA

RT	AREA	TYPE	ORINT	SPRINT
0.85	176100	PV	0.413	0.400
1.49	1637700	WV	0.952	0.919
3.09	1136000	WV	0.552	0.500
4.16	2309200	WV	1.101	1.000
7.09	1640200	WV	1.220	0.900
10.50	3722E+07	WV	0.900	40.100
12.00	1927200	WV	0.250	0.200
13.92	132750	WV	0.414	0.400
14.64	400460	WV	1.110	0.900
15.60	128020	PV	0.364	0.400
17.25	5449500	WV	0.606	10.000
18.45	447560	WV	0.606	1.500

TOTAL AREA= 2.7141E+07
MUL FACTOR= 1.0000E+00

Handwritten scribbles at the top of the page.



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(with surrogates)

Run # 1000

Time	Area	Height	Width	Height	Area
1.936	100000	100000	100000	100000	100000
2.65	100000	100000	100000	100000	100000
3.10	100000	100000	100000	100000	100000
4.11	100000	100000	100000	100000	100000
4.74	100000	100000	100000	100000	100000
5.15	100000	100000	100000	100000	100000

Handwritten notes at the bottom of the page.

AD-A156 283

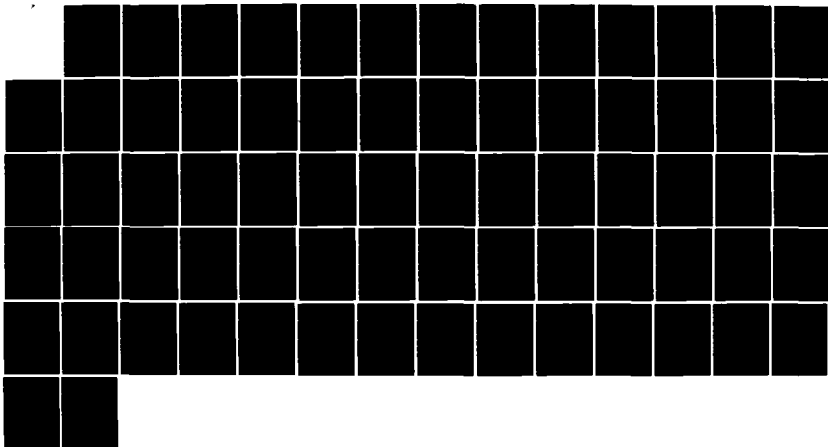
INSTALLATION RESTORATION PROGRAM PHASE II (STAGE 2-1)
VOLUME 2(U) RADIAN CORP AUSTIN TX R W BAUER MAY 85
F33615-83-D-4001

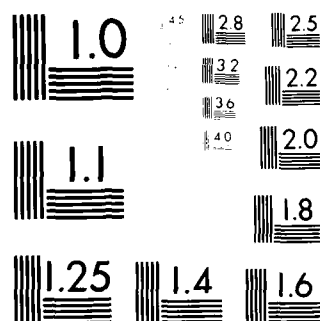
10/10

UNCLASSIFIED

F/G 13/2

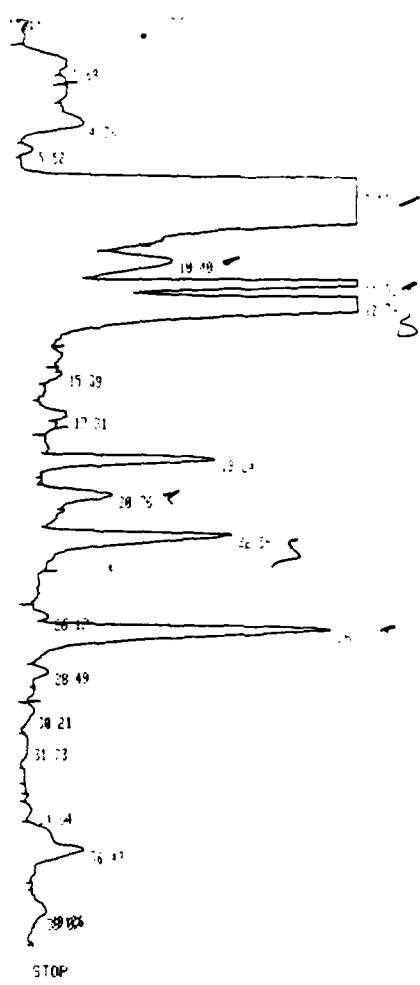
NL





MICROCOPY RESOLUTION TEST CHART
 NATIONAL BUREAU OF STANDARDS-1963-A

3
 24.0274
 34.7033-1.0
 13.1112
 5.8



Sample
 RB-1-1

```

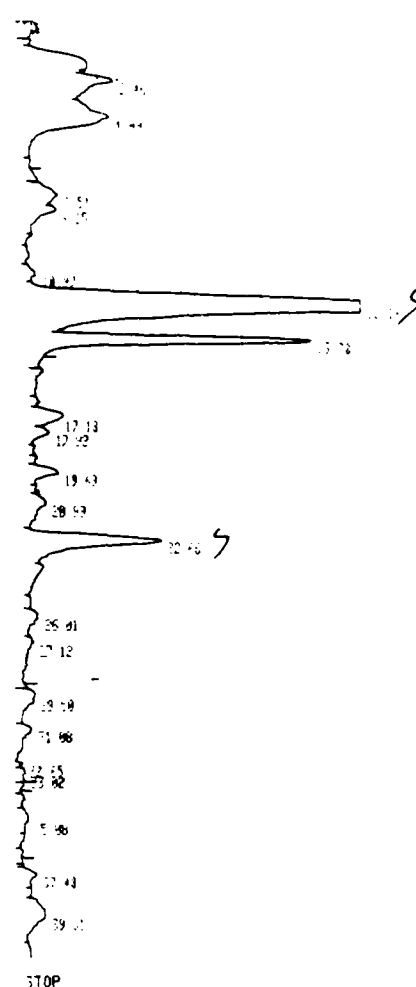
RUN # 558          SEP 24 1984 15.07.0

```

AREA	RT	AREA	TYPE	AMOUNT	W. %
1.52	416414	PP	0.004	0.00	
4.38	953270	VP	0.017	0.12	
5.52	143719	PP	0.000	0.00	
7.51	9676E+03	PP	1.011	0.14	
10.40	1183100	SP	0.008	0.00	
11.52	7513100	PP	0.274	1.00	
12.32	2513100	PP	0.102	0.10	
15.39	143719	PP	0.000	0.00	
17.31	143719	PP	0.000	0.00	
18.76	143719	PP	0.000	0.00	
20.51	143719	PP	0.000	0.00	
26.12	143719	PP	0.000	0.00	
28.49	143719	PP	0.000	0.00	
30.21	143719	PP	0.000	0.00	
31.73	143719	PP	0.000	0.00	
36.47	143719	PP	0.000	0.00	
39.05	143719	PP	0.000	0.00	

TOTAL AREA = 1.154E+05

3 14.07.13 W- 14.07.13 14.07.13 14.07.13



Sample
RB-1-2

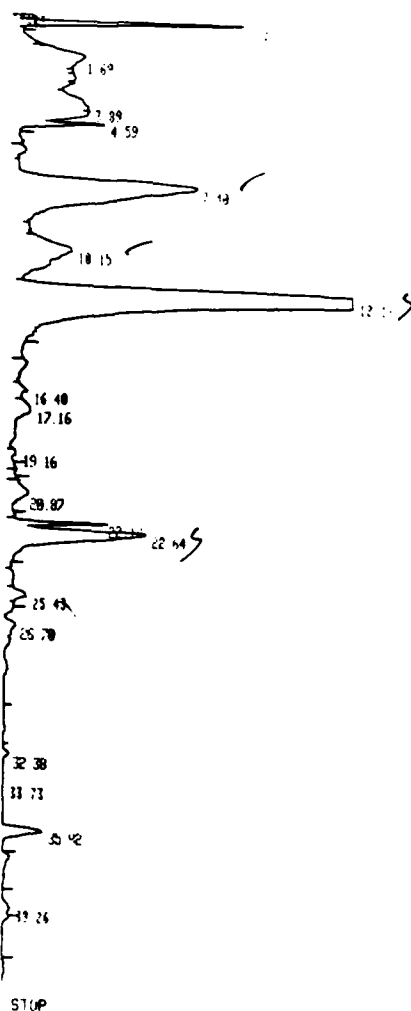
QUN # 159

LEH 24.04.14 14.07.13

RT	AREA	Wt	Wt	Wt
1.26	100.000	0.0	0.0	0.0
2.46	100.000	0.0	0.0	0.0
4.09	100.000	0.0	0.0	0.0
7.51	100.000	0.0	0.0	0.0
9.15	100.000	0.0	0.0	0.0
14.92	100.000	0.0	0.0	0.0
17.13	100.000	0.0	0.0	0.0
17.22	100.000	0.0	0.0	0.0
19.43	100.000	0.0	0.0	0.0
20.53	100.000	0.0	0.0	0.0
22.76	100.000	0.0	0.0	0.0
25.01	100.000	0.0	0.0	0.0
27.12	100.000	0.0	0.0	0.0
28.10	100.000	0.0	0.0	0.0
31.98	100.000	0.0	0.0	0.0
32.15	100.000	0.0	0.0	0.0
33.02	100.000	0.0	0.0	0.0
35.86	100.000	0.0	0.0	0.0
37.43	100.000	0.0	0.0	0.0
39.11	100.000	0.0	0.0	0.0

TOTAL AREA: 100.000

14-5045
 8509033030
 MFC
 13-1-30
 100
 5



Sample
 RB-1-3

RUN # 568

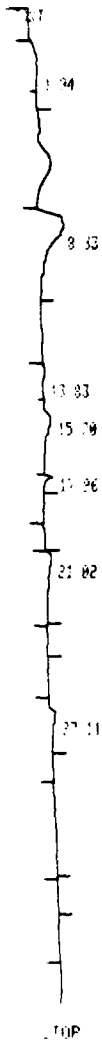
45 24.84 11.40.42

AREA2

RT	AREA	IS	NAME	AREA
0.21	652610	PP	4.1	7.462
1.69	974460	BV	0.755	1.700
3.89	1062000	VV	2.142	5.411
4.59	322700	VB	0.163	1.515
7.19	4123000	PV	0.212	19.175
10.15	1297700	VP	1.076	15.000
12.18	9075100	PB	4.201	42.771
16.40	29511	PV	0.351	0.421
17.16	151930	VP	0.315	0.175
19.16	70994	PB	0.253	0.172
20.87	170950	PB	0.543	1.405
22.18	790750	PV	0.136	1.405
22.64	1721000	VS	4.150	2.711
25.43	121930	PV	0.411	0.610
26.70	151120	PV	0.743	1.002
32.38	172610	BV	0.471	1.405
33.71	101110	VP	0.461	1.405
35.42	395100	PB	0.190	1.404
37.26	41000	VS	4.103	1.405

TOTAL AREA= 12.9100
 MUL FACTOR= 1.000000

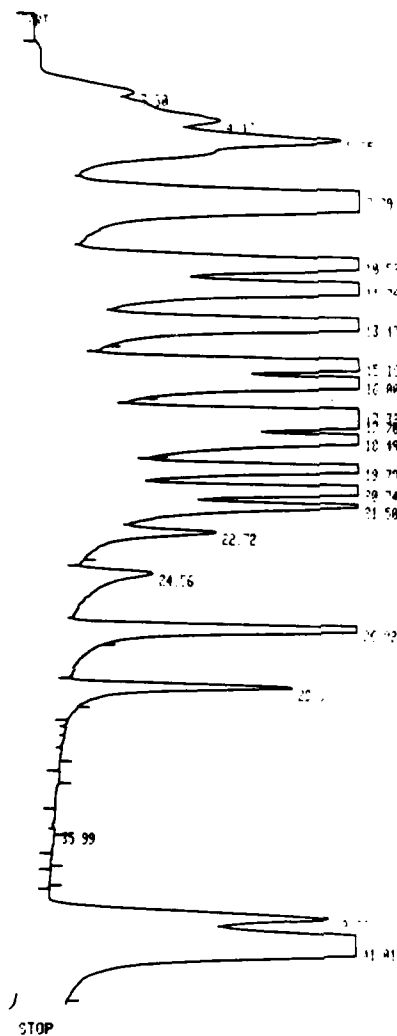
22
 310000
 310000
 310000



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SUN # 214				
TIME	AREA	TIME	AREA	TIME
1.24	100000	8.33	100000	13.83
15.78	100000	17.96	100000	21.02
27.11	100000			

CP 55-6603 198-601 100-50 (100)



STOP

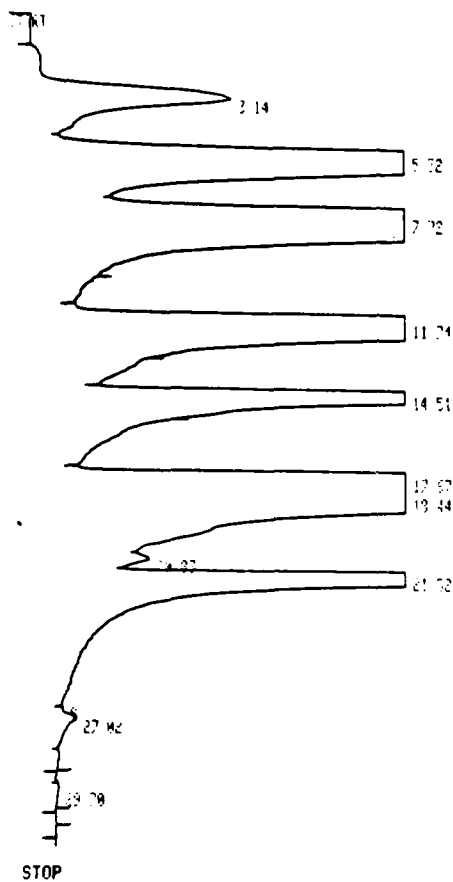
EPA 601
Calibration Standard
10 ppb

RUN # 295

WUG/22/84 11 11 50

AREA%	RT	AREA	TYPE	NP-HI	SPC%
3.30	2715000	PV	0.655	0.072	
4.43	7357000	VV	0.924	0.622	
5.25	1.4216E+07	VV	1.006	5.079	
7.70	2.9866E+07	VP	0.949	0.935	
10.59	1.3561E+07	PV	0.729	1.015	
11.76	1.7743E+07	VV	0.704	0.740	
13.43	1.3981E+07	VB	0.506	0.232	
15.16	2.3266E+07	PV	0.374	0.713	
16.00	2.0604E+07	VB	0.721	0.700	
17.72	1.0944E+07	FV	0.275	2.210	
17.70	2.0550E+07	VV	0.282	0.716	
19.42	1.4197E+07	VR	0.782	0.073	
19.79	1.2520E+07	EV	0.722	1.177	
19.74	1.5206E+07	VV	0.717	0.005	
21.50	6.402500	VV	0.484	0.200	
22.72	2.472000	VP	0.151	0.269	
24.76	2.528200	BP	0.19	0.047	
26.72	0.571000	PP	0.740	7.120	
29.53	4.066200	FB	0.132	1.071	
35.99	1.2202	FB	0.167	0.005	
37.72	7.372700	PV	0.587	0.074	
41.41	2.5126E+07	VB	1.100	0.335	

TOTAL AREA= 2.7000E+08
WIL FACTOR= 1.0000E+00



Q.C. Standard

RUN # 296

HUG/22/84 . 05 51

AREA%

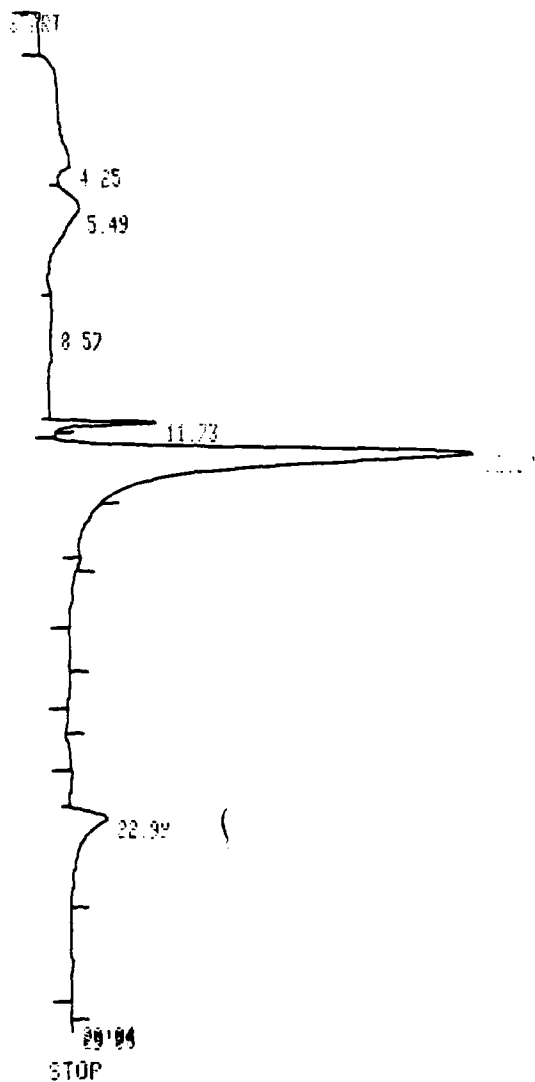
AREA	RT	AREA	TYPE	OR HT	AREA%
	3.14	70734500	PV	0.923	1.202
	5.32	2.5065E+07	VP	0.800	6.276
	7.72	5.2193E+07	VB	0.909	15.150
	11.74	6.2162E+07	PR	0.908	16.157
	14.51	1.5955E+07	PB	0.473	4.213
	17.67	8.3495E+07	GBH	0.994	22.570
	18.44	6.3417E+07	GBH	0.889	16.195
	20.83	2273600	TBB	0.997	0.062
	21.52	4.4500E+07	LHB	0.959	12.137
	27.02	7392853	BP	0.975	0.198
	29.70	74760	BP	0.918	0.002

```

TOTAL AREA= 3.6993E+08
MUL FACTOR= 1.0000E+00

```

CL 15000 Blank Sp 500



Blank
(with surrogates)

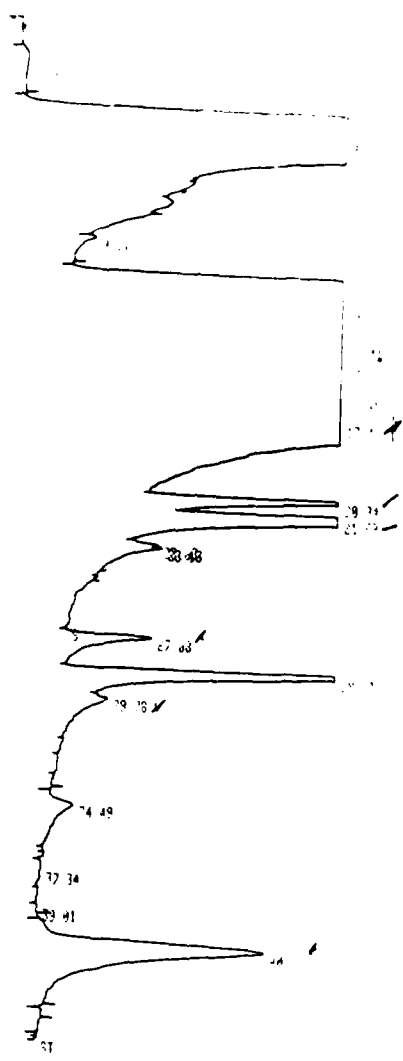
RUN # 297

AUG/22/84 17:48:01

RT	AREA	TYPE	HR/HI	AREA%
4.25	1967100	OV	2.360	15.786
5.49	1572700	VV	1.420	12.277
8.57	317650	VP	1.636	2.172
11.73	390190	FB	0.103	3.036
12.69	2635700	FB	0.616	50.413
22.39	968510	FB	0.830	7.536

TOTAL AREA= 1.2852E+07
• MUL FACTOR= 1.0000E+00

Handwritten notes at the top of the page, possibly indicating sample details or analysis parameters.



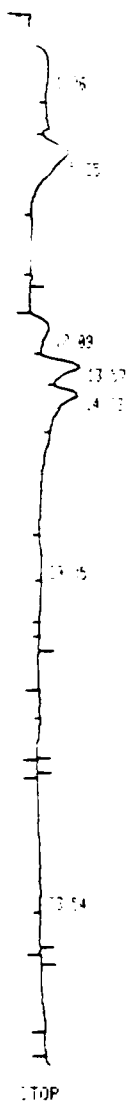
Sample
RB-5-1
(off scale)

Run # 286 Date/Time: AUG/21/84 11:55:30

AREA%	RT	AREA	TYPE	WRT/HI	AREA%
1.62	11.33	204320	PB	0.268	0.012
4.42	13.41	5105E+00	SRH	0.522	0.024
4.96	14.49	1.4235E+08	SHB	0.537	0.025
7.91	16.16	228520	TPB	0.429	0.011
9.51	17.17	0	BB	0.400	0.000
11.33	17.34	7191E+03	TCPU	0.719	0.033
13.41	19.91	3.423E+03	TSRH	0.661	0.025
14.49	20.84	3.570E+03	TSRH	0.727	0.033
16.16	21.63	1.3938E+07	LHH	0.409	0.071
17.17	27.83	5.714E+07	LHB	0.578	0.240
20.84	27.87	4.42E+00	ICV	0.761	0.021
21.63	27.98	1.393E+07	ICV	0.762	0.053
27.83	28.61	104460	ICV	0.762	0.004
27.87	29.29	8.66E+00	ICV	0.761	0.001
27.98	34.49	1.000	SV	0.744	0.000
28.61	37.34	1.000	SV	0.747	0.000
29.29	39.91	1.000	SV	0.744	0.000
34.49	40.79	1.000	SV	0.741	0.000
37.34		1.000	SV	0.741	0.000
39.91		1.000	SV	0.740	0.000
40.79		1.037E+07	CR	0.746	0.010

TOTAL AREA: 1.00E+08
MULTIPLIER: 1.0000E+00

Blank
(after instrument
cleaning)



UN # 287

005 41 84 00 2 79

244

	WEEK	WEEK	WEEK	WEEK
1	10/10/00	10/10/00	10/10/00	10/10/00
2	10/10/00	10/10/00	10/10/00	10/10/00
3	10/10/00	10/10/00	10/10/00	10/10/00
4	10/10/00	10/10/00	10/10/00	10/10/00
5	10/10/00	10/10/00	10/10/00	10/10/00
6	10/10/00	10/10/00	10/10/00	10/10/00
7	10/10/00	10/10/00	10/10/00	10/10/00
8	10/10/00	10/10/00	10/10/00	10/10/00
9	10/10/00	10/10/00	10/10/00	10/10/00
10	10/10/00	10/10/00	10/10/00	10/10/00

TOTAL AREA = 70,240M
ALL CONT'D - 1 998E-000



Sample
RB-5-1
1:10 Dilution

1114 1115

407.21-34 . . . 33 10

..PFA%

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20	Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28	Q29	Q30	Q31	Q32	Q33	Q34	Q35	Q36	Q37	Q38	Q39	Q40	Q41	Q42	Q43	Q44	Q45	Q46	Q47	Q48	Q49	Q50	Q51	Q52	Q53	Q54	Q55	Q56	Q57	Q58	Q59	Q60	Q61	Q62	Q63	Q64	Q65	Q66	Q67	Q68	Q69	Q70	Q71	Q72	Q73	Q74	Q75	Q76	Q77	Q78	Q79	Q80	Q81	Q82	Q83	Q84	Q85	Q86	Q87	Q88	Q89	Q90	Q91	Q92	Q93	Q94	Q95	Q96	Q97	Q98	Q99	Q100																																																																																																																																																																																																																										
1.10	1.11	1.12	1.13	1.14	1.15	1.16	1.17	1.18	1.19	1.20	1.21	1.22	1.23	1.24	1.25	1.26	1.27	1.28	1.29	1.30	1.31	1.32	1.33	1.34	1.35	1.36	1.37	1.38	1.39	1.40	1.41	1.42	1.43	1.44	1.45	1.46	1.47	1.48	1.49	1.50	1.51	1.52	1.53	1.54	1.55	1.56	1.57	1.58	1.59	1.60	1.61	1.62	1.63	1.64	1.65	1.66	1.67	1.68	1.69	1.70	1.71	1.72	1.73	1.74	1.75	1.76	1.77	1.78	1.79	1.80	1.81	1.82	1.83	1.84	1.85	1.86	1.87	1.88	1.89	1.90	1.91	1.92	1.93	1.94	1.95	1.96	1.97	1.98	1.99	2.00	2.01	2.02	2.03	2.04	2.05	2.06	2.07	2.08	2.09	2.10	2.11	2.12	2.13	2.14	2.15	2.16	2.17	2.18	2.19	2.20	2.21	2.22	2.23	2.24	2.25	2.26	2.27	2.28	2.29	2.30	2.31	2.32	2.33	2.34	2.35	2.36	2.37	2.38	2.39	2.40	2.41	2.42	2.43	2.44	2.45	2.46	2.47	2.48	2.49	2.50	2.51	2.52	2.53	2.54	2.55	2.56	2.57	2.58	2.59	2.60	2.61	2.62	2.63	2.64	2.65	2.66	2.67	2.68	2.69	2.70	2.71	2.72	2.73	2.74	2.75	2.76	2.77	2.78	2.79	2.80	2.81	2.82	2.83	2.84	2.85	2.86	2.87	2.88	2.89	2.90	2.91	2.92	2.93	2.94	2.95	2.96	2.97	2.98	2.99	3.00	3.01	3.02	3.03	3.04	3.05	3.06	3.07	3.08	3.09	3.10	3.11	3.12	3.13	3.14	3.15	3.16	3.17	3.18	3.19	3.20	3.21	3.22	3.23	3.24	3.25	3.26	3.27	3.28	3.29	3.30	3.31	3.32	3.33	3.34	3.35	3.36	3.37	3.38	3.39	3.40	3.41	3.42	3.43	3.44	3.45	3.46	3.47	3.48	3.49	3.50	3.51	3.52	3.53	3.54	3.55	3.56	3.57	3.58	3.59	3.60	3.61	3.62	3.63	3.64	3.65	3.66	3.67	3.68	3.69	3.70	3.71	3.72	3.73	3.74	3.75	3.76	3.77	3.78	3.79	3.80	3.81	3.82	3.83	3.84	3.85	3.86	3.87	3.88	3.89	3.90	3.91	3.92	3.93	3.94	3.95	3.96	3.97	3.98	3.99	4.00	4.01	4.02	4.03	4.04	4.05	4.06	4.07	4.08	4.09	4.10	4.11	4.12	4.13	4.14	4.15	4.16	4.17	4.18	4.19	4.20	4.21	4.22	4.23	4.24	4.25	4.26	4.27

$$\begin{aligned} \text{KOH} &= 3 \times 40 \text{ g} = 120 \text{ g} \\ \text{NaOH} &= 1 \times 40 \text{ g} = 40 \text{ g} \end{aligned}$$

A series of seven line drawings of fish species, labeled 1 through 7, arranged vertically. Each drawing shows the lateral profile of the fish, highlighting their unique shapes and sizes. The fish are depicted in black outlines on a white background.

[illegible]

7. 2011. 12. 14. 14:00
 8. 2011. 12. 14. 14:00

RB-5-2

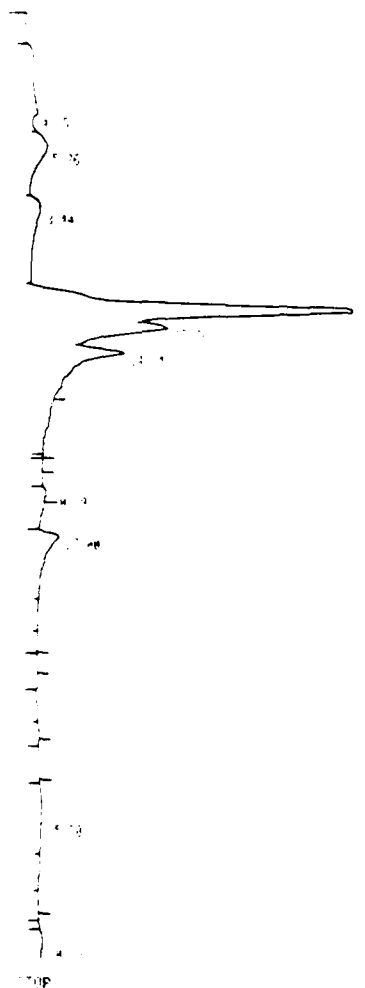


Sample
RB-5-2
1:50 Dilution

Peak #	Retention Time (min)	Area	Height	Width
1	10.5	1.2	1.5	0.5
2	11.2	1.5	1.8	0.5
3	12.0	1.8	2.2	0.5
4	12.8	2.0	2.5	0.5
5	13.5	2.2	2.8	0.5
6	14.2	2.5	3.0	0.5
7	15.0	2.8	3.5	0.5
8	15.8	3.0	3.8	0.5
9	16.5	3.2	4.0	0.5
10	17.2	3.5	4.2	0.5

RB-5-2

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Sample
RB-5-3
1:50 Dilution

Time (min)	Area	Height	Width	Volume
1	1000	100	1.0	1.0
2	2000	200	1.0	2.0
3	3000	300	1.0	3.0
4	4000	400	1.0	4.0
5	5000	500	1.0	5.0
6	6000	600	1.0	6.0
7	7000	700	1.0	7.0
8	8000	800	1.0	8.0
9	9000	900	1.0	9.0
10	10000	1000	1.0	10.0
11	11000	1100	1.0	11.0
12	12000	1200	1.0	12.0
13	13000	1300	1.0	13.0
14	14000	1400	1.0	14.0
15	15000	1500	1.0	15.0
16	16000	1600	1.0	16.0
17	17000	1700	1.0	17.0
18	18000	1800	1.0	18.0
19	19000	1900	1.0	19.0
20	20000	2000	1.0	20.0
21	21000	2100	1.0	21.0
22	22000	2200	1.0	22.0
23	23000	2300	1.0	23.0
24	24000	2400	1.0	24.0
25	25000	2500	1.0	25.0
26	26000	2600	1.0	26.0
27	27000	2700	1.0	27.0
28	28000	2800	1.0	28.0
29	29000	2900	1.0	29.0
30	30000	3000	1.0	30.0
31	31000	3100	1.0	31.0
32	32000	3200	1.0	32.0
33	33000	3300	1.0	33.0
34	34000	3400	1.0	34.0
35	35000	3500	1.0	35.0
36	36000	3600	1.0	36.0
37	37000	3700	1.0	37.0
38	38000	3800	1.0	38.0
39	39000	3900	1.0	39.0
40	40000	4000	1.0	40.0
41	41000	4100	1.0	41.0
42	42000	4200	1.0	42.0
43	43000	4300	1.0	43.0
44	44000	4400	1.0	44.0
45	45000	4500	1.0	45.0
46	46000	4600	1.0	46.0
47	47000	4700	1.0	47.0
48	48000	4800	1.0	48.0
49	49000	4900	1.0	49.0
50	50000	5000	1.0	50.0

Figure 1. The effect of the concentration of the *Agrobacterium* suspension on the transformation efficiency of *Agrobacterium* strains. The *Agrobacterium* strains were cultured in YEA medium for 24 h and then adjusted to the concentration of 1×10^8 cells/ml. The *Agrobacterium* strains were then cultured in YEA medium with different concentrations of the *Agrobacterium* suspension. The transformation efficiency was determined by the number of transformants per 10^6 cells. The results are shown in Table 1.

* 2011-2012: 100% of the total population
 * 2013-2014: 100% of the total population

[Faint handwritten notes at the top of the page]

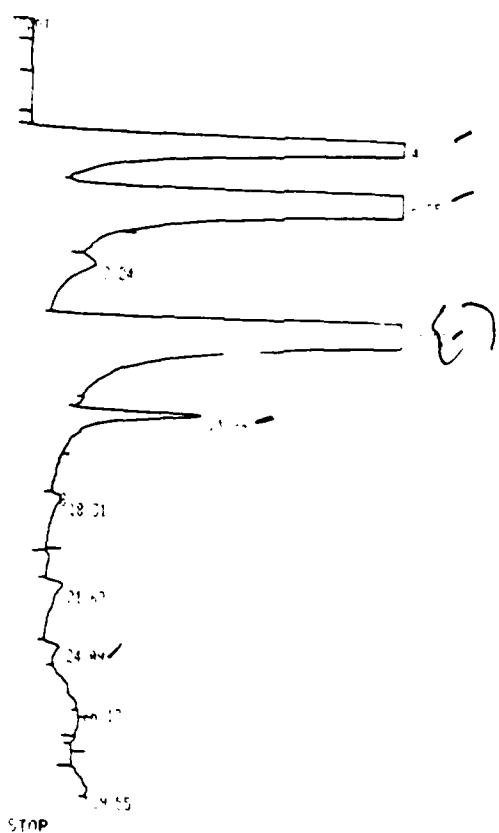


Sample
RB-5-3
1:5 Dilution
Duplicate

TABLE 1			
Time	Conc.	Temp.	Notes
0	0.0	25.0	
1	0.1	25.0	
2	0.2	25.0	
3	0.3	25.0	
4	0.4	25.0	
5	0.5	25.0	
6	0.6	25.0	
7	0.7	25.0	
8	0.8	25.0	
9	0.9	25.0	
10	1.0	25.0	
11	1.1	25.0	
12	1.2	25.0	
13	1.3	25.0	
14	1.4	25.0	
15	1.5	25.0	
16	1.6	25.0	
17	1.7	25.0	
18	1.8	25.0	
19	1.9	25.0	
20	2.0	25.0	
21	2.1	25.0	
22	2.2	25.0	
23	2.3	25.0	
24	2.4	25.0	
25	2.5	25.0	
26	2.6	25.0	
27	2.7	25.0	
28	2.8	25.0	
29	2.9	25.0	
30	3.0	25.0	

[Faint text at the bottom of the page, possibly a footer or page number]

CL
 343271
 M.C.
 143109-012
 M.S. 5-1
 55 100
 110
 5



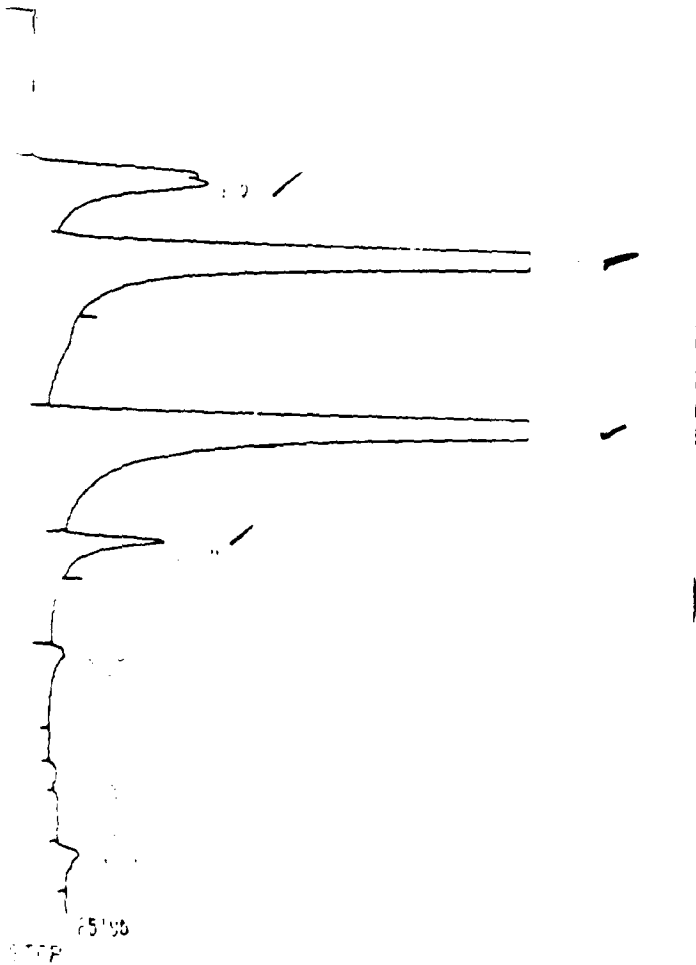
Sample
 RB-5-1
 Second Column
 Confirmation

RUN # 345

TIME	AREA	WPLH	WPE	WPHI	WPRD
4.40	1.0000E+02	1.00	1.00	1.00	1.00
6.55	1.0000E+02	1.00	1.00	1.00	1.00
9.14	1.0000E+02	1.00	1.00	1.00	1.00
11.52	1.0000E+02	1.00	1.00	1.00	1.00
14.94	1.0000E+02	1.00	1.00	1.00	1.00
18.01	1.0000E+02	1.00	1.00	1.00	1.00
21.67	1.0000E+02	1.00	1.00	1.00	1.00
24.44	1.0000E+02	1.00	1.00	1.00	1.00
26.17	1.0000E+02	1.00	1.00	1.00	1.00
29.45	1.0000E+02	1.00	1.00	1.00	1.00

TOTAL AREA = 1.0000E+05

340875
 840818-020
 113-5-2115-12



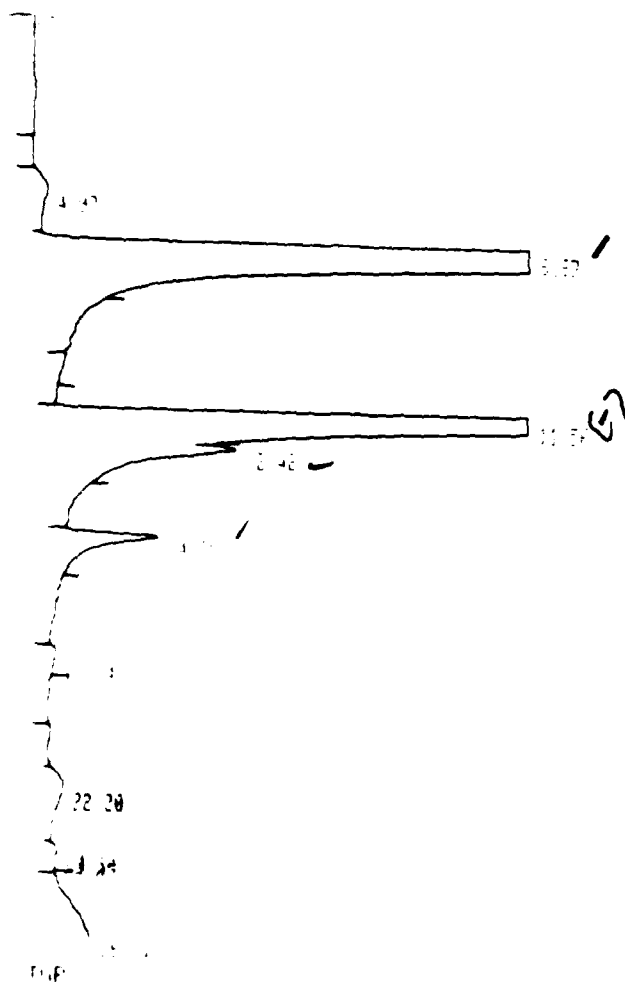
Sample
 RB-5-2
 Second Column
 Confirmation

TIME 25.00

TIME	AREA	CONC	WGT
10.55	1495000	1.0	1.000
11.00	1000000	1.0	1.000
11.50	1000000	1.0	1.000
12.00	1000000	1.0	1.000
12.50	1000000	1.0	1.000
13.00	1000000	1.0	1.000
13.50	1000000	1.0	1.000
14.00	1000000	1.0	1.000
14.50	1000000	1.0	1.000
15.00	1000000	1.0	1.000

TOTAL AREA = 4.000E+07

Q 34007K 21 58079-030 M CC RB 5-3 35.40 5/5



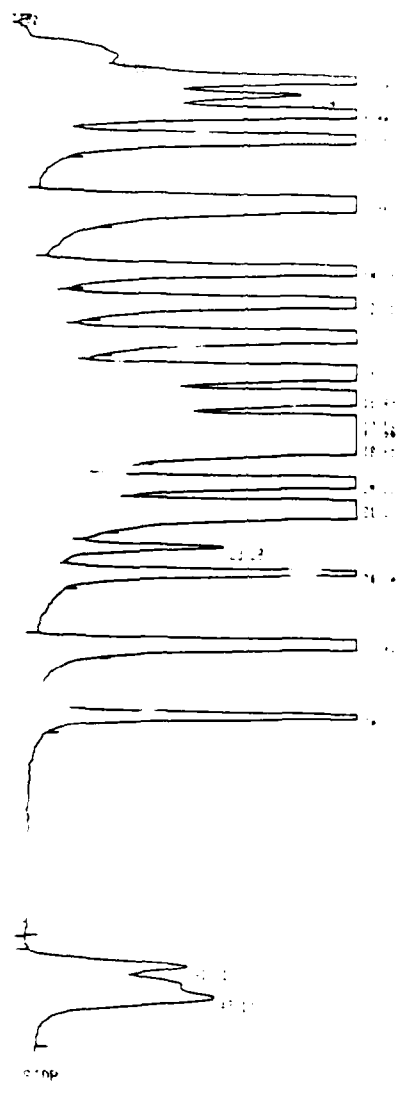
Sample
RB-5-3
Second Column
Confirmation

11/4/84 HUG/22/84 1 06.76

TIME	AREA	PERCENT	CONC	REMARKS
22.20	115000	0.004	0.004	
24.00	514100	0.004	0.004	
24.00	514100	0.004	0.004	
24.00	514100	0.004	0.004	
24.00	514100	0.004	0.004	
24.00	514100	0.004	0.004	
24.00	514100	0.004	0.004	
24.00	514100	0.004	0.004	
24.00	514100	0.004	0.004	
24.00	514100	0.004	0.004	

TOTAL AREA= 4.2906E+02
MUL FACTOR= 1.0000E+00

Handwritten notes at the top of the page, possibly indicating sample identification or analysis parameters.



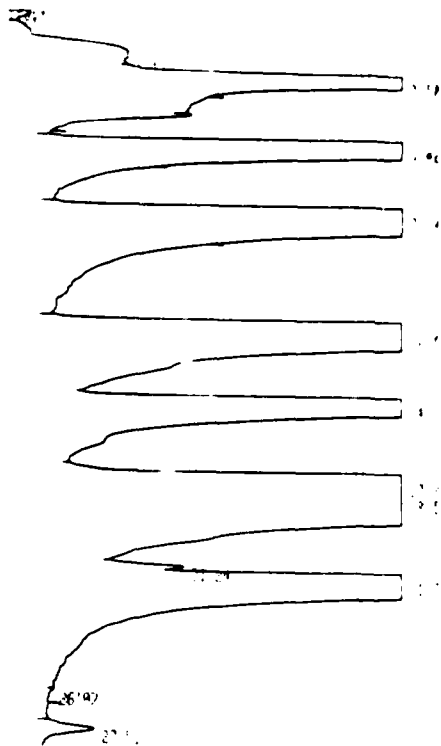
EPA 601
Calibration Standard
10 ppb

DATA 003 AUG 15 84 10:11 AM

RT	AREA	TYPE	WRT	WRT
1.67	1790000	PP	0.051	0.051
2.68	7510000	PP	0.053	0.053
3.38	2000000	PP	0.057	0.057
4.08	2700000	PP	0.053	0.053
5.15	1000000	PP	0.046	0.046
7.46	1000000	PP	0.051	0.051
10.95	1000000	PP	0.059	0.059
12.35	1000000	PP	0.044	0.044
13.82	1000000	PP	0.042	0.042
15.32	1000000	PP	0.045	0.045
17.49	1000000	PP	0.044	0.044
19.56	1000000	PP	0.049	0.049
21.04	1000000	PP	0.049	0.049
23.00	1000000	PP	0.044	0.044
25.07	1000000	PP	0.047	0.047
27.04	1000000	PP	0.041	0.041
29.00	1000000	PP	0.042	0.042
31.00	1000000	PP	0.041	0.041
33.00	1000000	PP	0.042	0.042
35.00	1000000	PP	0.041	0.041
37.00	1000000	PP	0.041	0.041
39.00	1000000	PP	0.041	0.041
41.00	1000000	PP	0.041	0.041
43.00	1000000	PP	0.041	0.041

TOTAL AREA: 100000000
 MEAN: 100000000

2
 1006.67 EPA 20
 1077.77 cm1
 5.12



STOP

Q.C. Spike
 10 ppb

PHN # 104

10.5.10.84 10.5.10.84

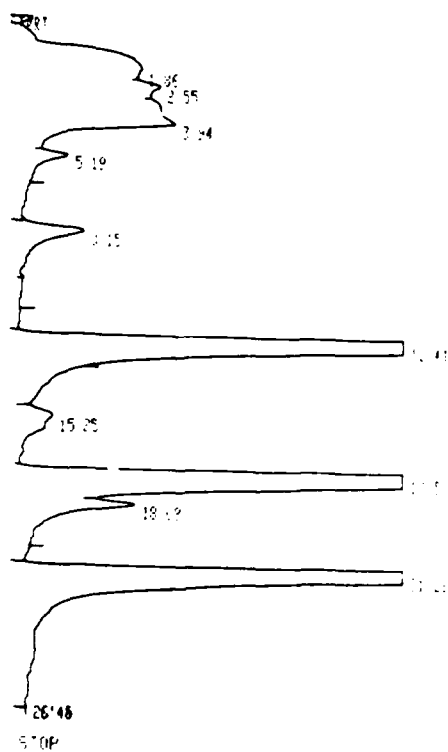
AREA:

RT	AREA	TIME	CONC	UNIT
1.43	1.00E+00	PP	1.00	1.00
2.58	2.00E+00	PP	2.00	2.00
5.82	2.50E+00	PP	2.50	2.50
7.64	4.75E+00	PP	4.75	4.75
12.05	7.05E+00	PP	7.05	7.05
14.31	1.00E+00	PP	1.00	1.00
17.09	1.00E+00	PP	1.00	1.00
18.52	8.40E+00	PP	8.40	8.40
21.24	1.00E+00	PP	1.00	1.00
21.72	6.00E+00	PP	6.00	6.00
27.51	7.41E+00	PP	7.41	7.41

TOTAL AREA= 4.00E+00
 MUL FACTOR= 1.00E+00

STOP
ESCAPE

U A65016E 1975 HPL 575 Spk



Second Q.C. Spike
10 ppb

RUN # 100

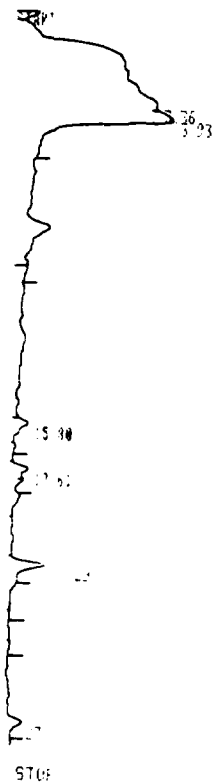
005715 84 101 100 100

AREA2

RT	AREA	TYPE	UNIT	CONC
2.55	1.00E+00	PP	1.112	1.00
2.55	1.00E+00	PP	1.112	1.00
5.19	1.00E+00	PP	1.112	1.00
10.15	1.00E+00	PP	1.112	1.00
15.25	1.00E+00	PP	1.112	1.00
18.12	1.00E+00	PP	1.112	1.00
26.48	1.00E+00	PP	1.112	1.00
TOTAL	1.00E+00	PP	1.112	1.00

TOTAL AREA: 1.00E+00

03
 M316F
 Chalk
 4/1

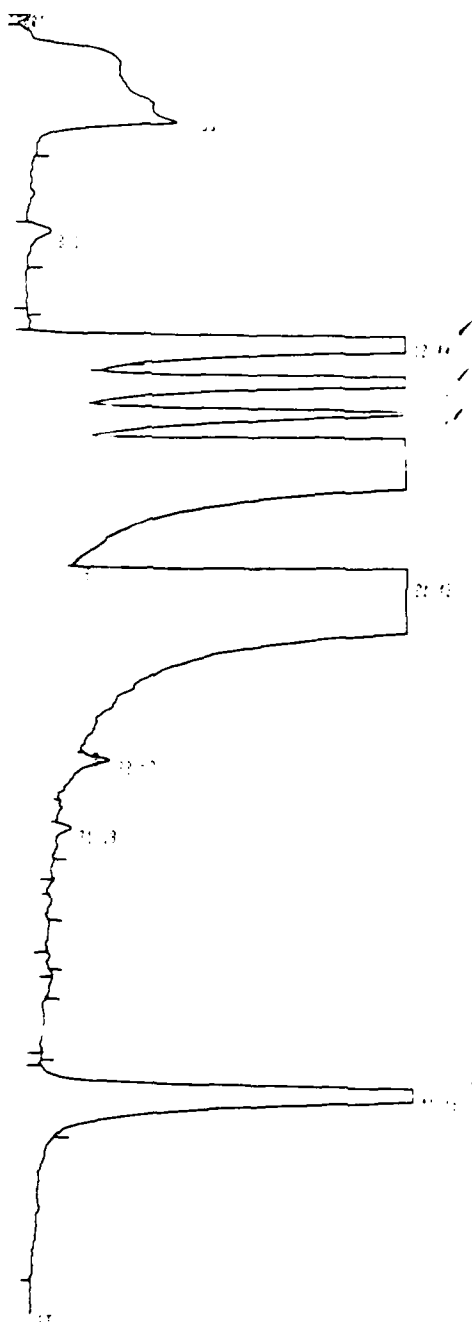


Blank

RUN # 006		006 10 04 00 00 00	
AREA			
RT	AREA	TYPE	18.41
1.06	5311000	PV	0.028
1.47	2075400	VB	0.000
15.10	107100	SP	0.004
17.61	57100	PV	0.000
21.29	10000	PV	0.000
27.41	20000	PC	0.000

TOTAL AREA= 10000.00
 MUL FACTOR= 1.000000

20 9408105-010
 M-C RB-6-1 25-10-51



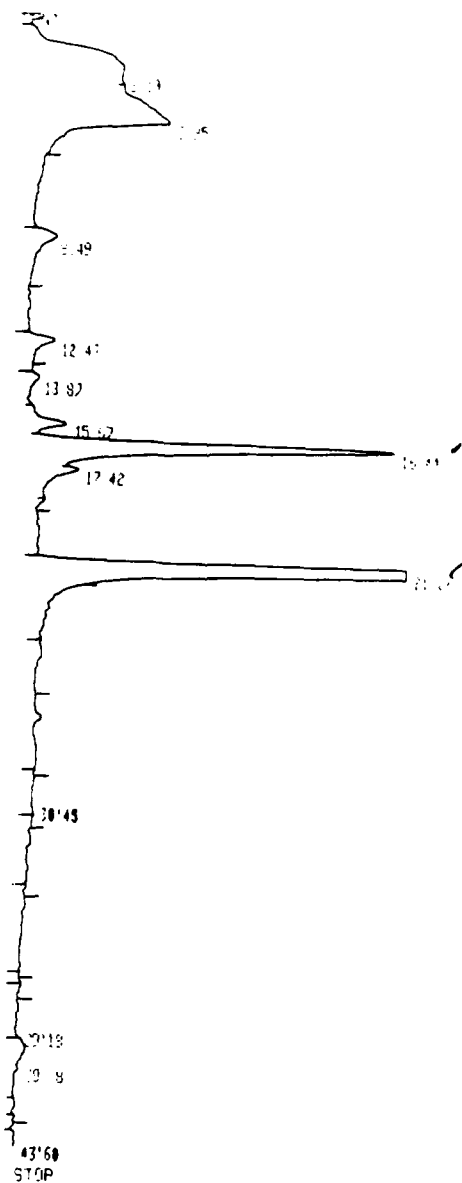
Sample
 RB-6-1
 (off scale)

RUN # 100 100-10000 100-10000

AREA	RT	AREA	TYPE	AREA	AREA
	3.99	7722000	PP	2.174	1.174
	3.18	201070	PP	0.506	0.506
	12.44	10000000	PP	4.000	4.000
	13.92	2500000	PP	0.791	0.791
	15.16	1000000	PP	0.500	0.500
	16.22	2.500E+09	PP	0.501	0.501
	17.43	1.000E+08	PP	0.502	0.502
	29.52	357550	PP	0.501	0.501
	31.18	100070	PP	0.503	0.503
	41.49	9444000	PP	0.700	0.700

TOTAL AREA = 4.000E+09

21 2453164 2453165-0.00 1.50

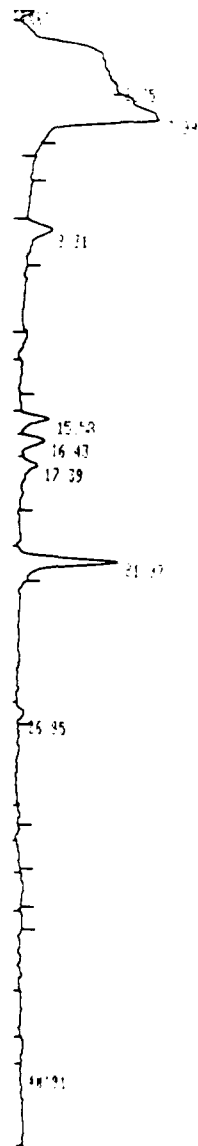


Sample
RB-6-1
1:50 Dilution

TIME	AREA	PERCENT	CONC	WGT
12.47	2298400	92	1.210	11.70
13.82	4328600	90	1.512	22.570
15.62	7417400	80	0.571	1.300
17.42	2363300	90	0.451	1.221
20.45	2219200	90	0.429	0.170
22.18	3578500	90	0.481	1.000
23.90	7144700	90	0.458	1.000
43.60	5284700	90	0.564	1.000
43.60	1552200	90	0.712	0.000

TOTAL AREA= 1.002E+07
MUL FACTOR= 1.0000E+00

12
 10/31/67
 3rd 3-03C
 14C
 137-6-2
 135 170
 1:50
 50



Sample
 RB-6-1
 1:50 Dilution

RUN # 100

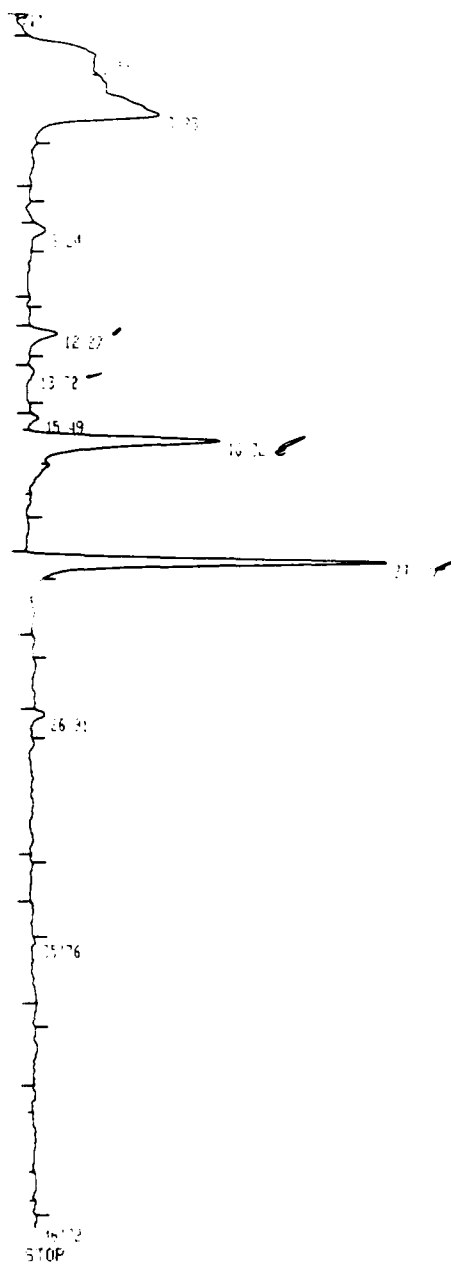
10/31/67

AREA

RT	AREA	PE	MT	WT
2.15	911200	PP	1.75	1.75
2.40	240200	PP	1.75	1.75
2.71	101000	PP	1.75	1.75
15.43	247000	PP	1.75	1.75
16.43	101000	PP	1.75	1.75
17.39	256500	PP	1.75	1.75
21.07	101000	PP	1.75	1.75
25.35	52000	PP	1.75	1.75

TOTAL AREA 1100000
 10/31/67

2450 05-22
 McCAF
 5ml
 12/1



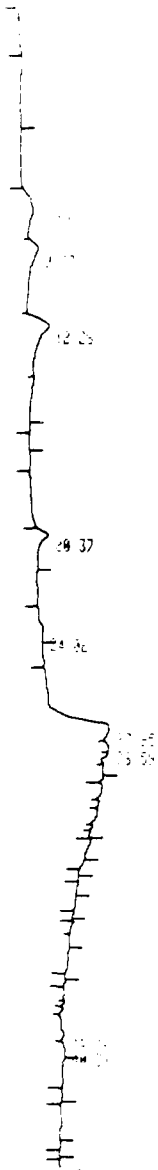
Sample
 RB-6-2
 1:5 Dilution

RUN # 1111 11/11/11 11:11:11

AREA	FW	SS	Wt %	Wt %
1.05	10.0000	10	1.000	1.000
7.07	70.0000	70	7.000	7.000
11.24	11.0000	11	1.100	1.100
13.27	13.0000	13	1.300	1.300
13.72	13.0000	13	1.300	1.300
15.49	15.0000	15	1.500	1.500
16.12	16.0000	16	1.600	1.600
26.21	26.0000	26	2.600	2.600
27.76	27.0000	27	2.700	2.700

Total Area: 111.1111
 11/11/11 11:11:11

Blank

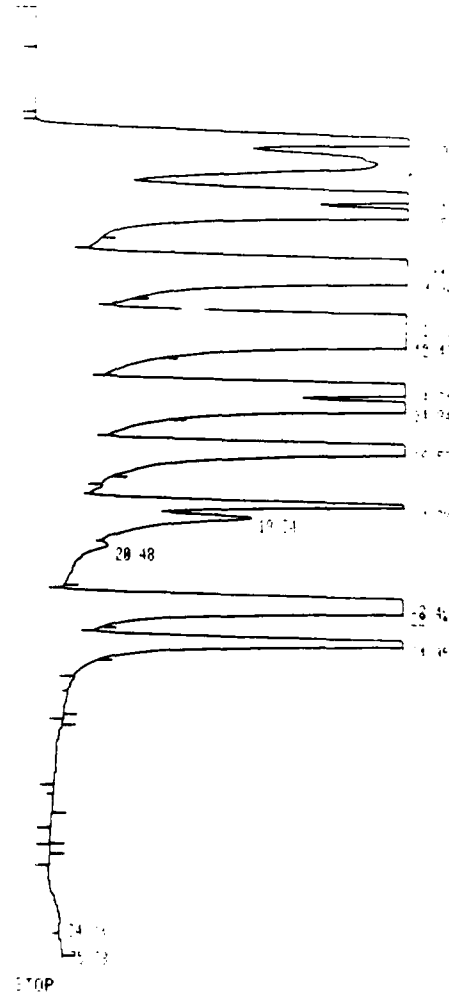


Blank

RT	AREA	CONC	WGT	WGT
1.15	1000000	10	1.15	1.15
1.16	1000000	10	1.16	1.16
1.17	1000000	10	1.17	1.17
1.18	1000000	10	1.18	1.18
1.19	1000000	10	1.19	1.19
1.20	1000000	10	1.20	1.20
1.21	1000000	10	1.21	1.21
1.22	1000000	10	1.22	1.22
1.23	1000000	10	1.23	1.23
1.24	1000000	10	1.24	1.24
1.25	1000000	10	1.25	1.25
1.26	1000000	10	1.26	1.26
1.27	1000000	10	1.27	1.27
1.28	1000000	10	1.28	1.28
1.29	1000000	10	1.29	1.29
1.30	1000000	10	1.30	1.30

TOTAL AREA = 1000000
TOTAL WGT = 1000000

54-1008 10/10/84



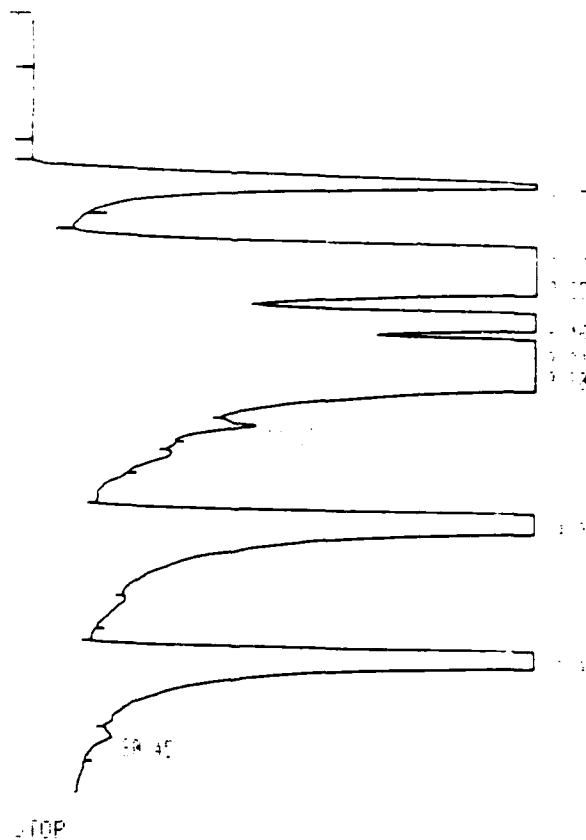
EPA 601
Calibration Standard
10 ppb

RUN # 338 AUG 12 1984

RT	AREA	HT	W	AREA	HT	W
4.02	1.0262E+02	1.00	0.404	1.000	1.000	1.000
5.66	1.2483E+02	1.00	0.943	1.000	1.000	1.000
6.91	1.0612E+02	1.00	0.504	1.000	1.000	1.000
7.55	1.2729E+02	1.00	0.479	1.000	1.000	1.000
9.44	1.7075E+02	1.00	0.202	1.000	1.000	1.000
12.00	1.6766E+02	1.00	0.474	1.000	1.000	1.000
13.10	1.0727E+02	1.00	0.205	1.000	1.000	1.000
13.51	1.2177E+02	1.00	0.303	1.000	1.000	1.000
12.43	1.7389E+02	1.00	0.243	1.000	1.000	1.000
14.24	1.4015E+02	1.00	0.206	1.000	1.000	1.000
14.54	1.4757E+02	1.00	0.406	1.000	1.000	1.000
15.57	1.3627E+02	1.00	0.414	1.000	1.000	1.000
17.70	1.0000E+00	1.00	0.000	1.000	1.000	1.000
18.74	1.0000E+00	1.00	0.000	1.000	1.000	1.000
19.48	1.0000E+00	1.00	0.000	1.000	1.000	1.000
20.48	1.0000E+00	1.00	0.000	1.000	1.000	1.000
24.74	1.0000E+00	1.00	0.000	1.000	1.000	1.000
25.73	1.0000E+00	1.00	0.000	1.000	1.000	1.000

TOTAL AREA= 1.0000E+00
MIN FACTOR= 1.0000E+00

CP
B4377C
W/1000 cont
S/1000



RUN # 339

NOV/27/84 11:07:35

AREA

RT	AREA	TYPE	ORIGIN	PEAK
1.53	7701600	CB	0.484	2.010
1.58	1.9510E+07	PM	0.500	14.037
1.75	1.6349E+07	IV	0.459	10.036
1.96	1.9977E+07	WH	0.507	14.050
2.24	1.6101E+07	LHR	0.501	1.156
2.80	1.6100E+07	LHR	0.507	10.114
3.57	1.6100E+07	LHR	0.507	1.094
4.00	1.6100E+07	LHR	0.507	1.094
4.60	1.6100E+07	LHR	0.507	1.094
5.00	1.6100E+07	LHR	0.507	1.094
5.45	1.6100E+07	LHR	0.507	1.094

TOTAL AREA = 1.5E+08
MUL FACTOR = 1.000E+00

5-3210
 5000

15.0000

15.0000



Blank

15.0000

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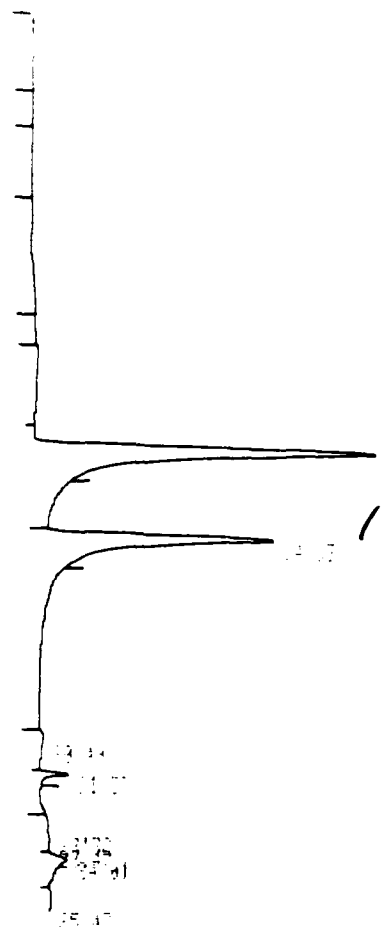
15.0000

15.0000

15.0000

15.0000

37-3076
 37-3075-010
 7-20
 7-20
 95-100
 5-10



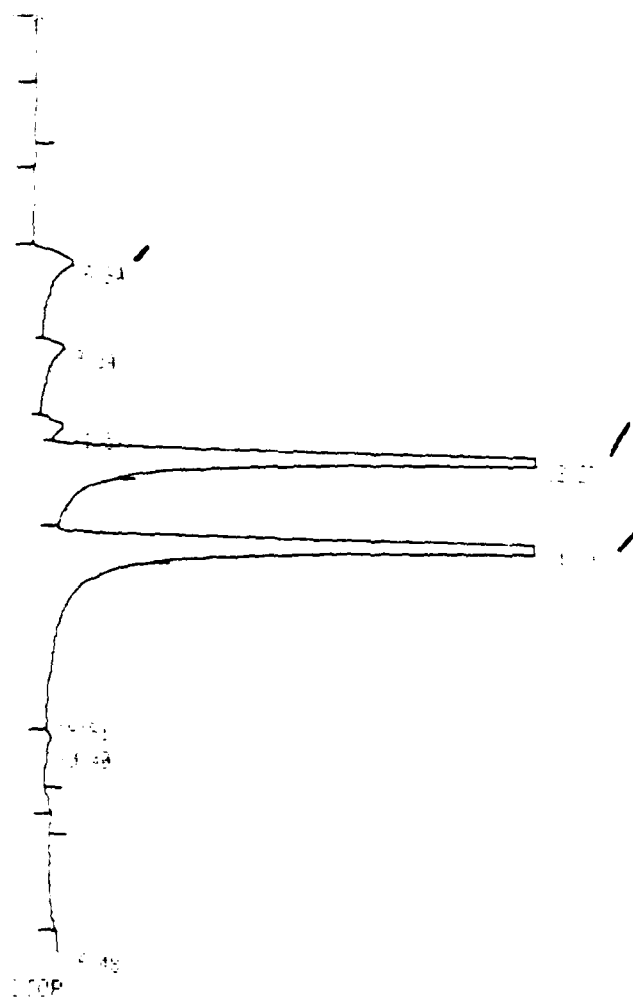
Sample
 RB-6-1
 Second Column
 Confirmation

STOP

RUN # 301
 AUG 17 1984 11:23:00

RET.	AREA	TYPE	CONC	REF
10.34	2406100	PS	0.000	0.000
11.07	2507600	PS	0.000	0.000
11.22	10000	PS	0.000	0.000
11.28	11000	PS	0.000	0.000
11.34	10000	PS	0.000	0.000
11.47	10000	PS	0.000	0.000

TOTAL AREA= 1000000
 MUL FACTOR= 1.0000E+00



Sample
RB-6-2
Second Column
Confirmation

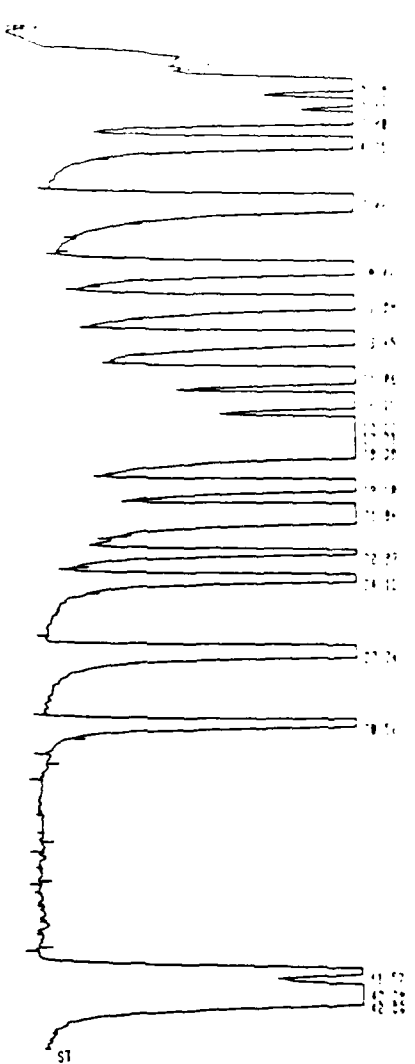
7-14-42

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• 55 •

DT	PR	PR	PR	PR
01-04	12-10-00	07	00-00	00-00
02-04	01-11-00	08	00-00	00-00
03-04	02-12-00	09	00-00	00-00
04-04	03-01-00	10	00-00	00-00
05-04	04-02-00	11	00-00	00-00
06-04	05-03-00	12	00-00	00-00
07-04	06-04-00	13	00-00	00-00
08-04	07-05-00	14	00-00	00-00
09-04	08-06-00	15	00-00	00-00

PLOT=AREA=1 00000000
 PLOT=AREA=1 00000000

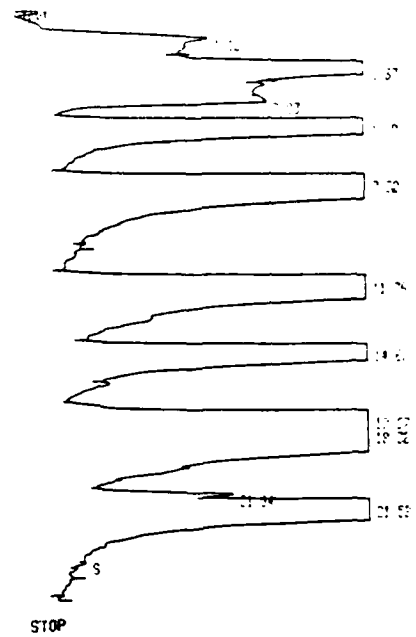


EPA 601
Calibration Standard
10 ppb

RUN # 181 AUG/10/84 01 17 P.

AREA#	RT	AREA	TYPE	AK	HT	AREA#
	1.26	1271600	PV	0.598	4.554	
	2.33	6982200	VV	0.372	1.505	
	3.11	2481300	VV	0.166	1.274	
	3.88	6187100	VV	0.412	3.125	
	4.85	2276000	VB	0.349	3.755	
	7.46	13506000	PR	0.445	6.974	
	10.42	2703700	FB	0.410	3.000	
	11.89	9952300	PR	0.200	4.612	
	13.45	10442000	LD	0.701	5.150	
	15.06	14744000	PS	0.353	7.364	
	16.19	10431000	EV	0.754	5.255	
	17.22	10994000	VV	0.276	5.625	
	17.71	18165000	VV	0.116	9.725	
	19.29	11895000	VB	0.355	6.061	
	19.29	10297000	FB	0.293	5.100	
	21.06	23711000	SB	0.452	11.967	
	22.97	10437000	SB	0.100	0.374	
	24.12	34071000	SB	0.306	1.749	
	27.34	12929000	SB	0.200	7.111	
	30.56	35280000	PR	0.700	1.000	
	41.57	25327000	EV	0.576	1.271	
	42.09	20271000	VV	0.471	1.000	
	42.88	37645000	VV	0.769	1.977	

Q.C. Spike 10 ppb



Q.C. Spike
10 ppb

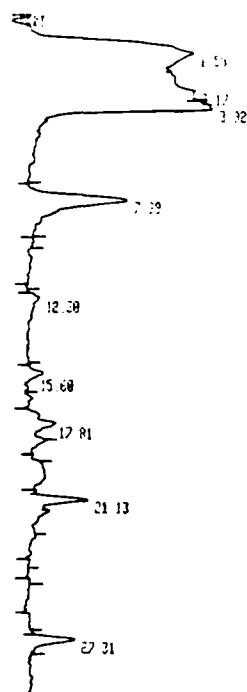
RUN # 104 AUG 18/84 04 01 54

AREA#	RT	AREA	TYPE	PR/MT	APPEAR
	1.12	408910	PB	0.369	0.136
	2.37	6023300	PB	0.300	2.011
	3.83	600480	VP	0.404	0.204
	4.79	1.6670E+07	PB	0.345	5.561
	7.32	3.3264E+07	PB	0.431	11.134
	11.76	3.5849E+07	PB	0.377	11.959
	14.67	1.0760E+07	VP	0.390	3.589
	17.67	8.0892E+07	SPH	0.308	26.905
	18.32	5.9852E+07	CHH	0.325	19.766
	21.04	1.035E+08	TOP	0.146	0.024
	21.52	5.5243E+07	VPB	0.321	18.429

TOTAL AREA= 2.9277E+08
MIL FACTOR= 1.0000E+00

CR 1431016 P. 2 1/2

02
Product
Blank



STOP

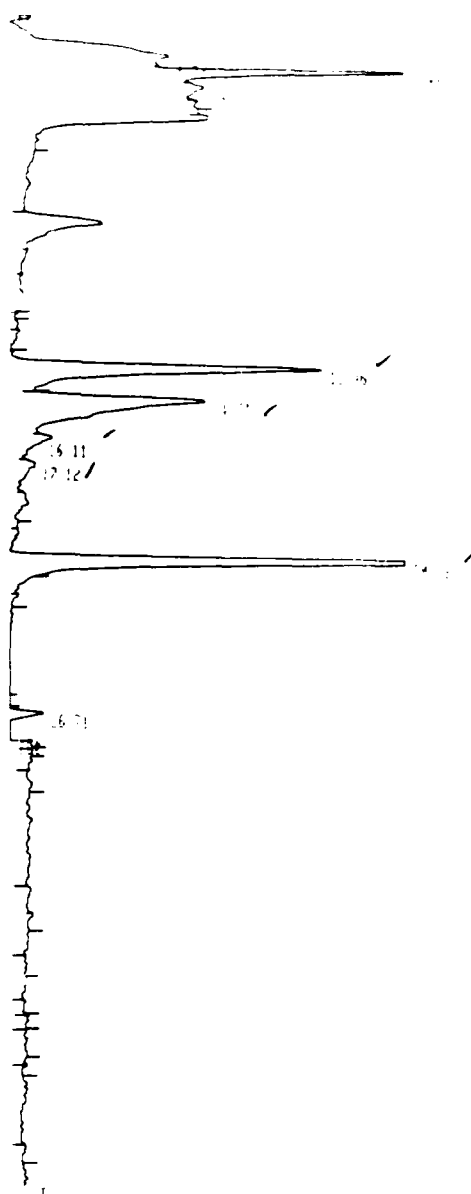
Blank
 (with surrogates)

RUN # 165 AUG/18/84 94 48 51

AREA#	RT	AREA	TYPE	AP/HT	CONC
1	1.50	1153200	PV	0.938	41.51%
3	3.12	273790	VO	1.208	9.97%
3	3.92	0	ED	0.000	0.00%
7	7.99	716200	PD	0.625	25.64%
12	12.38	101960	ED	0.579	7.02%
15	15.68	76917	BB	0.399	2.75%
17	17.91	104260	PD	0.405	3.72%
21	21.13	107460	PV	0.291	6.71%
27	27.31	168120	ED	0.331	6.42%

TOTAL AREA= 2797600
 MUL FACTOR= 1.0000E+00

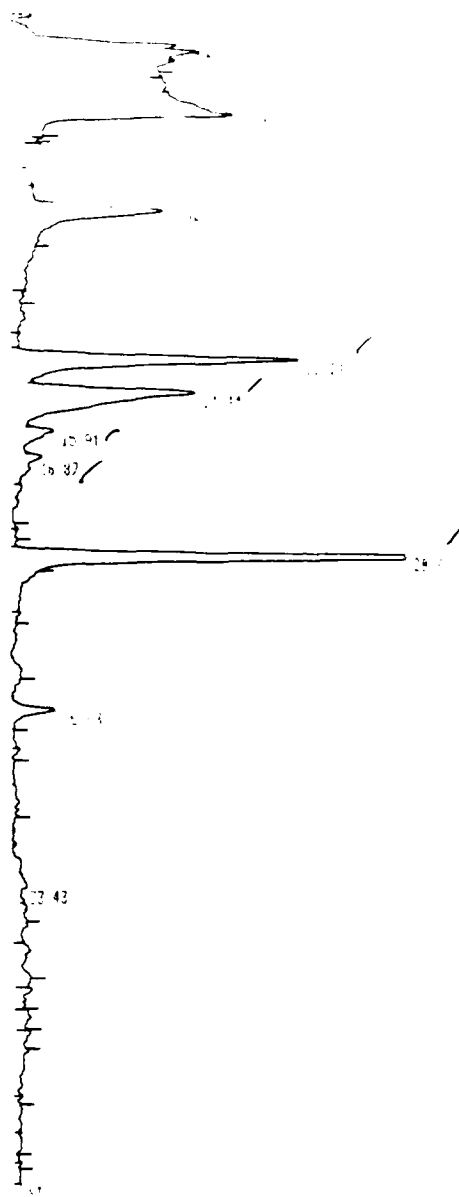
12-12-14
12-12-14
12-12-14



Sample
RB-12-1

RET	AREA	PER	CONC	WGT
1.45	12.4104	1.0	1.000	1.00
2.04	100.478	1.0	1.000	1.00
2.18	1.00	1.0	1.000	1.00
2.24	1.00	1.0	1.000	1.00
2.46	1.00	1.0	1.000	1.00
3.11	1.00	1.0	1.000	1.00
3.71	1.00	1.0	1.000	1.00
12.12	1.00	1.0	1.000	1.00
12.12	1.00	1.0	1.000	1.00

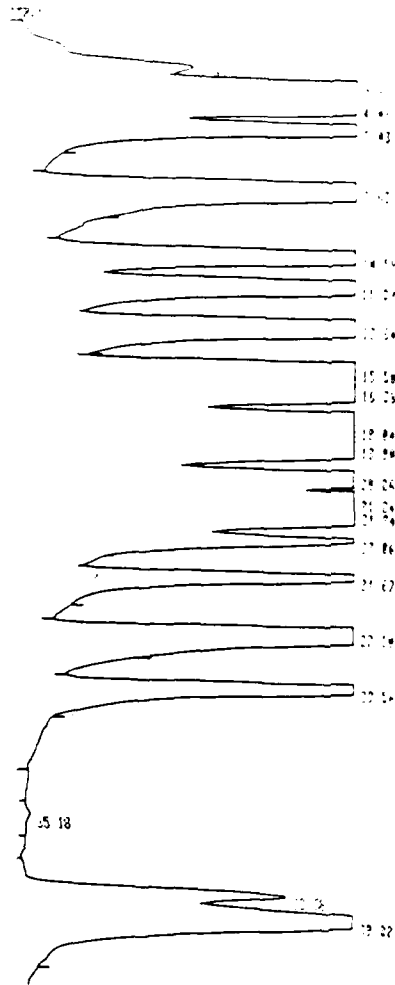
12-12-14
12-12-14



Sample
RB-12-1
Replicate

RUN # 109				
10/19/94 09:11:34				
AREA	RT	FWHM	CONC	AREA
1.19	10.91	0.05	0.005	1.19
1.32	16.87	0.05	0.005	1.32
1.75	28.1	0.05	0.005	1.75
1.46	31.3	0.05	0.005	1.46
17.14	32.43	0.05	0.005	17.14
11.44	10.91	0.05	0.005	11.44
15.71	16.87	0.05	0.005	15.71
10.07	28.1	0.05	0.005	10.07
10.67	31.3	0.05	0.005	10.67
15.67	32.43	0.05	0.005	15.67
13.43	10.91	0.05	0.005	13.43

TOTAL AREA: 100.00
ALL PEAKS: 1.000000

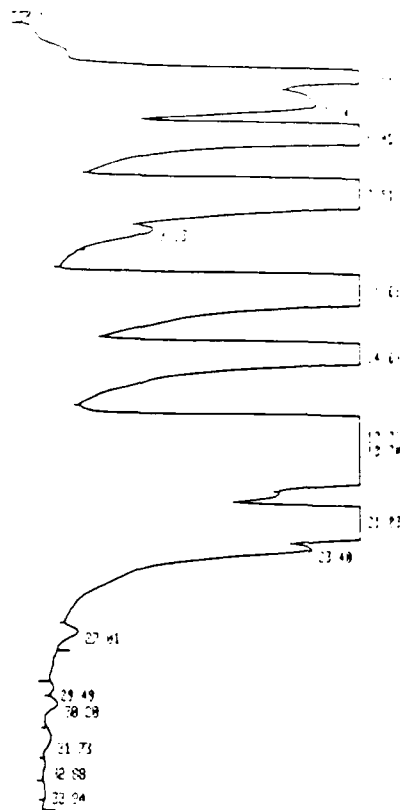


EPA 601
Calibration Standard
10 ppb

RIJN # 389 SEP 15/84 02 56 36

AREA	RT	AREA	TYPE	WZHT	AREA
2	43	1.165E+07	PV	0.708	0.95
3	12	5.679E+07	VV	0.567	1.64
4	83	4.546E+07	VV	0.655	3.72
5	83	3.505E+07	VD	0.571	2.84
7	63	7.712E+07	PV	0.523	6.15
10	59	4.140E+07	PV	0.406	3.79
11	39	4.799E+07	VV	0.499	4.00
13	64	5.628E+07	VD	0.635	5.40
15	50	1.136E+08	GEN	0.504	12.64
16	23	5.457E+07	TRP	0.503	4.45
18	04	1.398E+08	TRP	0.788	12.72
19	04	7.359E+07	TRP	0.573	6.88
20	26	4.977E+07	TPV	0.404	4.05
21	24	8.443E+07	SHH	0.504	6.26
21	34	7.151E+07	TRB	0.516	5.00
23	06	4.827E+07	TRB	0.427	3.39
24	87	1.350E+07	VB	0.556	1.62
27	14	2.709E+07	PR	0.564	5.91
29	16	2.325E+07	PR	0.417	2.32
35	19	4.447E+07	PR	0.425	4.22
38	60	1.176E+07	PV	0.610	1.21
42	82	4.275E+07	VB	1.145	3.47

TOTAL AREA = 1,1045 + 40



STOP

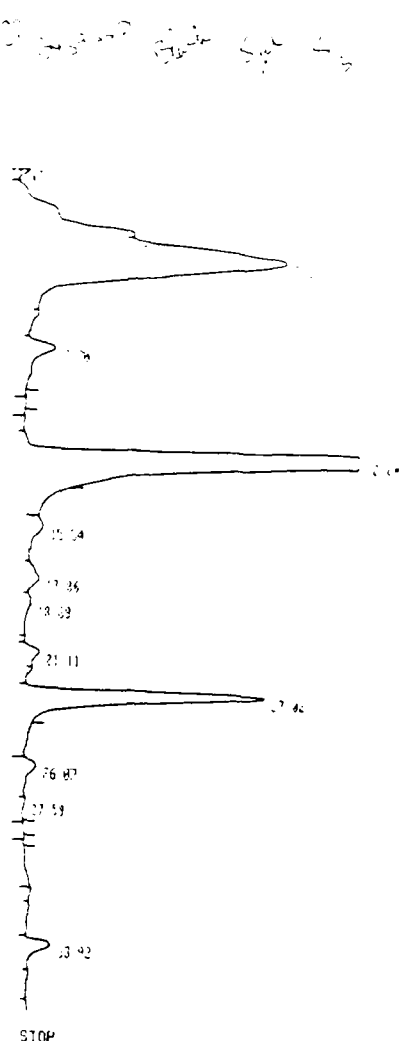
RUN # 390

SEP-05/84 08:49:31

AREA#	RT	AREA	TYPE	AR/HT	SPR
	2.54	4.9726E+02	FV	0.272	2.424
	3.94	3.3107E+02	VH	1.161	1.709
	5.05	1.2757E+03	CHH	0.494	6.901
	7.51	2.3409E+03	CHH	0.743	12.106
	9.33	1.5507E+03	CHH	0.606	3.082
	11.69	3.0957E+03	CHH	0.748	10.664
	14.63	7.0494E+02	TOS	0.231	4.201
	17.27	3.2909E+03	CHH	0.652	13.202
	18.00	3.0621E+03	CHH	0.756	28.101
	21.83	3.0349E+03	CHH	0.706	16.202
	22.40	2.2117E+03	TOS	0.410	3.101
	22.41	5.0771E+02	TOS	0.512	3.042
	29.49	2.1172E+03	LY	0.156	0.117
	30.20	5.4275E+02	VO	0.505	3.079
	31.73	5.5179E+02	VO	0.274	3.074
	32.88	1.7377E+03	VO	0.512	0.007
	33.34	1.1710E+03	VO	0.173	0.002

TOTAL AREA= 1.007E+04
MUL FACTOR= 1.000E+00

Q.C. Spike
10 ppb



Blank
(with surrogates)

STOP

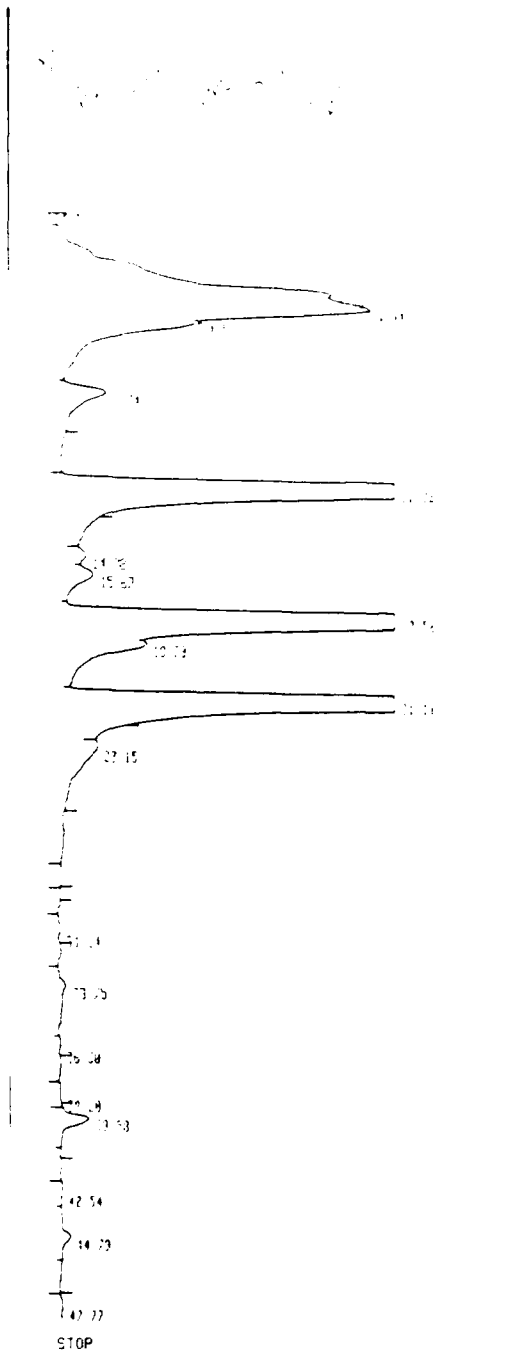
RUN # 291

SEP 05 84 09:31:14

AREA%

RT	CONC	TYPE	OR-M	AREA
2.24	250.000	SV	0.000	0.00
3.92	2.000	SV	1.000	0.00
7.09	2.000	SV	1.000	0.00
12.68	4.152	SV	0.000	0.00
15.24	100.000	SV	0.000	0.00
17.36	200.000	SV	0.000	0.00
18.02	200.000	SV	0.000	0.00
21.11	200.000	SV	0.000	0.00
27.42	1.250	SV	1.000	0.00
26.87	200.000	SV	0.000	0.00
27.59	200.000	SV	0.000	0.00
33.92	127.000	SV	0.000	0.00

TOTAL AREA= 1.000 E+00
MUL FACTOR= 1.00000000



Second Q.C. Spike
10 ppb

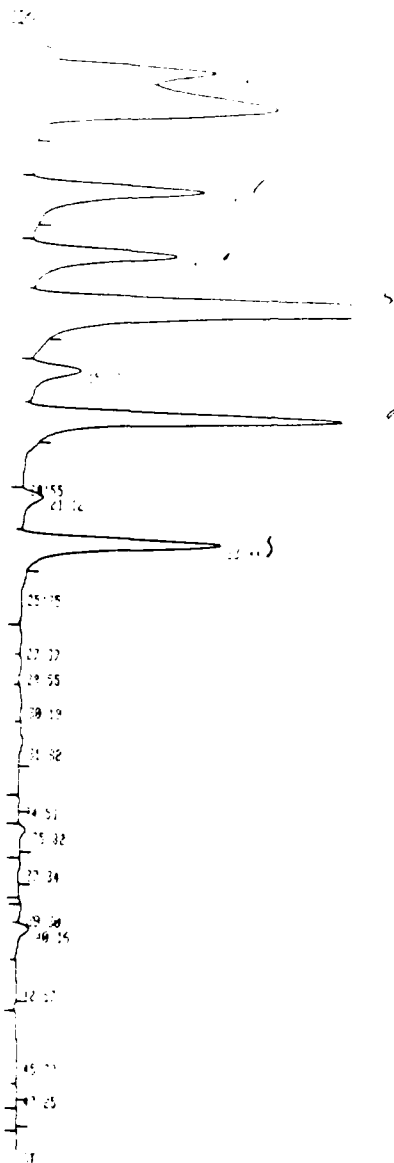
PUN # 332

12/15/54 10 21 45

CHROM

RET	AREA	TIME	CONC	WGT
1.1	2.707E+02	PP	4.045	3.115
1.11	2.574E+02	PP	4.041	3.115
1.13	2.574E+02	PP	4.041	3.115
1.14	2.574E+02	PP	4.041	3.115
1.15	2.574E+02	PP	4.041	3.115
1.16	2.574E+02	PP	4.041	3.115
1.17	2.574E+02	PP	4.041	3.115
1.18	2.574E+02	PP	4.041	3.115
1.19	2.574E+02	PP	4.041	3.115
1.20	2.574E+02	PP	4.041	3.115
1.21	2.574E+02	PP	4.041	3.115
1.22	2.574E+02	PP	4.041	3.115
1.23	2.574E+02	PP	4.041	3.115
1.24	2.574E+02	PP	4.041	3.115
1.25	2.574E+02	PP	4.041	3.115
1.26	2.574E+02	PP	4.041	3.115
1.27	2.574E+02	PP	4.041	3.115
1.28	2.574E+02	PP	4.041	3.115
1.29	2.574E+02	PP	4.041	3.115
1.30	2.574E+02	PP	4.041	3.115
1.31	2.574E+02	PP	4.041	3.115
1.32	2.574E+02	PP	4.041	3.115
1.33	2.574E+02	PP	4.041	3.115
1.34	2.574E+02	PP	4.041	3.115
1.35	2.574E+02	PP	4.041	3.115
1.36	2.574E+02	PP	4.041	3.115
1.37	2.574E+02	PP	4.041	3.115
1.38	2.574E+02	PP	4.041	3.115
1.39	2.574E+02	PP	4.041	3.115
1.40	2.574E+02	PP	4.041	3.115
1.41	2.574E+02	PP	4.041	3.115
1.42	2.574E+02	PP	4.041	3.115
1.43	2.574E+02	PP	4.041	3.115
1.44	2.574E+02	PP	4.041	3.115
1.45	2.574E+02	PP	4.041	3.115
1.46	2.574E+02	PP	4.041	3.115
1.47	2.574E+02	PP	4.041	3.115
1.48	2.574E+02	PP	4.041	3.115
1.49	2.574E+02	PP	4.041	3.115
1.50	2.574E+02	PP	4.041	3.115
1.51	2.574E+02	PP	4.041	3.115
1.52	2.574E+02	PP	4.041	3.115
1.53	2.574E+02	PP	4.041	3.115
1.54	2.574E+02	PP	4.041	3.115
1.55	2.574E+02	PP	4.041	3.115
1.56	2.574E+02	PP	4.041	3.115
1.57	2.574E+02	PP	4.041	3.115
1.58	2.574E+02	PP	4.041	3.115
1.59	2.574E+02	PP	4.041	3.115
1.60	2.574E+02	PP	4.041	3.115
1.61	2.574E+02	PP	4.041	3.115
1.62	2.574E+02	PP	4.041	3.115
1.63	2.574E+02	PP	4.041	3.115
1.64	2.574E+02	PP	4.041	3.115
1.65	2.574E+02	PP	4.041	3.115
1.66	2.574E+02	PP	4.041	3.115
1.67	2.574E+02	PP	4.041	3.115
1.68	2.574E+02	PP	4.041	3.115
1.69	2.574E+02	PP	4.041	3.115
1.70	2.574E+02	PP	4.041	3.115
1.71	2.574E+02	PP	4.041	3.115
1.72	2.574E+02	PP	4.041	3.115
1.73	2.574E+02	PP	4.041	3.115
1.74	2.574E+02	PP	4.041	3.115
1.75	2.574E+02	PP	4.041	3.115
1.76	2.574E+02	PP	4.041	3.115
1.77	2.574E+02	PP	4.041	3.115
1.78	2.574E+02	PP	4.041	3.115
1.79	2.574E+02	PP	4.041	3.115
1.80	2.574E+02	PP	4.041	3.115
1.81	2.574E+02	PP	4.041	3.115
1.82	2.574E+02	PP	4.041	3.115
1.83	2.574E+02	PP	4.041	3.115
1.84	2.574E+02	PP	4.041	3.115
1.85	2.574E+02	PP	4.041	3.115
1.86	2.574E+02	PP	4.041	3.115
1.87	2.574E+02	PP	4.041	3.115
1.88	2.574E+02	PP	4.041	3.115
1.89	2.574E+02	PP	4.041	3.115
1.90	2.574E+02	PP	4.041	3.115
1.91	2.574E+02	PP	4.041	3.115
1.92	2.574E+02	PP	4.041	3.115
1.93	2.574E+02	PP	4.041	3.115
1.94	2.574E+02	PP	4.041	3.115
1.95	2.574E+02	PP	4.041	3.115
1.96	2.574E+02	PP	4.041	3.115
1.97	2.574E+02	PP	4.041	3.115
1.98	2.574E+02	PP	4.041	3.115
1.99	2.574E+02	PP	4.041	3.115
2.00	2.574E+02	PP	4.041	3.115

9



Sampl
RB-20

RUN # 394

CHROM 11 11 11 11

RT	AREA	TYPE	NAME	UNIT
2.48	1.50E+02	OV	4.113	1.50E+02
3.91	2.35E+02	OV	1.120	2.35E+02
7.84	1.12E+02	OV	4.113	1.12E+02
10.44	1.02E+03	PP	4.113	1.02E+03
12.52	4.11E+02	PP	4.113	4.11E+02
15.52	2.00E+02	PP	4.113	2.00E+02
17.52	1.00E+02	PP	4.113	1.00E+02
21.12	1.02E+03	PP	4.113	1.02E+03
27.43	1.00E+02	PP	4.113	1.00E+02
29.22	1.00E+02	PP	4.113	1.00E+02
30.55	1.00E+02	PP	4.113	1.00E+02
30.14	1.00E+02	PP	4.113	1.00E+02
31.12	1.00E+02	PP	4.113	1.00E+02
34.51	1.00E+02	PP	4.113	1.00E+02
35.32	1.00E+02	PP	4.113	1.00E+02
37.34	1.00E+02	PP	4.113	1.00E+02
39.28	1.00E+02	PP	4.113	1.00E+02
40.25	1.00E+02	PP	4.113	1.00E+02
45.11	1.00E+02	PP	4.113	1.00E+02
47.25	1.00E+02	PP	4.113	1.00E+02
47.37	1.00E+02	PP	4.113	1.00E+02

APPENDIX 6

This appendix provides information regarding Task 6,
as discussed in text Section 3.6.

Appendix Contents

There is no Task 6 Appendix requirement at this time.
Appendix 6 was listed in order to maintain numeric order with task numbers.

APPENDIX 7

This appendix provides information regarding Task 7,
as discussed in text Section 3.7.

Appendix Contents

- 7-A Suggested Monitor Well Drilling and
Installation Procedures

SUGGESTED MONITOR WELL DRILLING AND INSTALLATION PROCEDURES

A series of monitor wells are planned to better define hydrogeologic conditions and the nature and extent of ground-water contamination in areas surrounding McClellan AFB. Suggested measures for the installation of the monitor wells are detailed in the following sections.

Supervision of Drawing Activities

All well installation activities should be conducted under the direct supervision of a geologist or geotechnical engineer. Representative geologic samples should be collected, containerized, described, and logged at five-foot intervals during well drilling operations. Samples should also be collected and where significant changes are noted during drilling. The geologist supervising the well installation effort should also ensure that safety procedures and new construction/development specifications described in the Work Plan are adhered to by the drilling contractor.

DRILLING METHODOLOGY

Monitor well drilling should be conducted by two methods. The hollow stem auger (HSA) method should be used in areas where the maximum depth of drilling is less than about 120 feet as conditions allow. The HSA method should be used for the emplacement of 4-inch diameter monitor wells in the first significant waterbearing zone. The direct air rotary with casing drive method should be used to drill wells in excess of 120 feet. Suggested procedures for monitor well drilling are detailed below.

Hollow-Stem Auger

As discussed in Section 7.0, the hollow-stem auger method offers a relatively rapid, efficient drilling method that will result in the timely installation of shallow monitor wells. In areas where the depth to water is

less than about 100 feet, the hollow stem auger method provides an accurate means for determining the characteristics and thickness of the geologic units encountered during drilling. Drilling should be accomplished without the introduction of drilling fluids, thereby permitting the precise determination of water-bearing strata. The acquisition of samples through the hollow center of the augers with a split-spoon or Shelby tube is a rapid and reliable means of obtaining geologic samples.

For emplacement of 4-inch diameter monitor wells, the use of 12-inch outside diameter, 8-inch inside diameter hollow-stem augers is required. The use of a 12-inch diameter hollow stem auger to depths up to 120 feet will require the use of piloting techniques. Piloting will consist of using a 6 or 8 inch hollow-stem auger to create a pilot hole for the 12-inch augers. Sampling operations will be conducted during piloting operations.

Upon drilling to total depth and diameter, the well casing and completion materials should be emplaced through the hollow stem of the auger flights. The use of 12-inch diameter hollow-stem augers for reaming operations will require that a "knock-out" plug be placed in the down-hole end of the 12-inch drill string to prevent cuttings from entering the hollow-stem. Immediately prior to the emplacement of the casing and seven within the drill string, the hollow-stem should be filled with "clean" or chemically compatible water to at least the elevation of the water table. Placement of water within the hollow-stem will prevent the possible washing in of materials into the augers at the time the knock-out or auger plug is removed. Materials washed into the hollow-stem of the augers may cause the stem to be clogged or the well casing and screen to become locked.

Completion materials such as sand, bentonite and grout should be emplaced through the hollow stem of the augers during withdrawal to promote vertical continuity of the completion. Care should taken to ensure that the casing and screen do not become "sand wedged" during the withdrawal of the augers.

All down-hole drilling tools should be thoroughly cleaned using a high-temperature, high-pressure cleaner to prevent cross-contamination between well borings. As a further measure to prevent possible cross-contamination, all soil sampling equipment (A-rods, Shelby tube, and split spoon) should be thoroughly cleaned between borings. The Shelby tube and/or split spoon should be washed and rinsed between samples.

The method and types of fluids employed for cleaning the Shelby tube and/or split spoon between samples will be dependent upon the type of chemical analysis (if any) performed for the soil samples. If organic analyses are required, reagent-grade solvents, such as acetone or methanol alcohol may be required for cleaning operations. If no analyses are to be performed, then only water will be required for washing sampling devices.

No petroleum or lead-based thread compounds should be employed on down-hole tools if organic or trace metal analyses are to be performed. If lubricants are necessary; vegetable oil or a fluorocarbon-based lubricant may be used if they are chemically discernible from parameters to be analyzed.

Care should be taken to prevent the introduction of drill rig fluids, such as lubricating and hydraulic oil, into the well bore-hole. A small earthen berm should be constructed around the bore-hole while it is open to prevent possible entry of surface contaminants during run-off events.

Direct Air-Rotary Method with Casing Drive

Depending on actual conditions encountered in the field, monitor wells deeper than approximately 120 feet should be drilled using air-rotary with casing drive methods. As discussed in Section 7.0, the air rotary with casing drive methods consists of essentially a normal rotary method except that compressed air is employed as the drilling fluid. In order to allow for return of representative cuttings, prevent bore-hole collapse during drilling, and restrict or eliminate vertical movement of ground water within the boring, steel casing should be advanced as the bit proceeds. Normally,

the casing is slightly larger in diameter than the drill bit to allow for a tight formation-to-casing contact. Wobble bits or expanding bits may be employed to create a boring diameter larger than of the driven casing. A standard rotary bit should be used to ensure the highest practical formation-to-casing contact. A wobble or expanding bit may be required if the driving and/or extraction of the temporary casing becomes difficult when a standard bit is used.

As discussed in Section 7.0, the use of air rotary with casing drive promotes the integrity of the bore-hole and should prevent/reduce possible cross-contamination of aquifer subunits during drilling. The air-rotary method yields continuous and accurate geologic and water quality samples with depth. The method also provides for good well completion control.

All air rotary operations should be conducted without the use of liquids where possible. Occasionally, water and/or possibly foam may be required to be injected into the air stream for bore-hole/casing cleanout. Such a requirement is likely to occur where adhesive clay materials are encountered. If water and/or foam is required, care should be taken to ensure that only clean, potable water and chemically compatible foams are introduced into the bore-hole. Petroleum and metal-based thread compounds should not be used for lubricating down-hole tool joints/threads.

Sampling and decontamination operations used for air-rotary drilling operations should essentially be the same as those employed for augering. Samples collected from the cuttings stream, while being geologically representative, will be stripped of some, if not all, volatile hydrocarbons (if present in the strata) as they are produced from the discharge port. If required, representative lithologic samples may be obtained for volatile compounds by tripping out the drillstem and bit and inserting down-hole sampling tools. Such operations will require relatively large amounts of time where samples are to be retrieved at significant depths. The presence of volatile organic compounds in deeper, saturated zones may be determined as drilling proceeds by periodically tripping a small-diameter

pump into the bore-hole to purge the bore-hole (after sufficient recovery) to obtain a sample. If a properly sized pump is used, the pump may be deployed with the drillstem and bit in the borehole.

As saturated zones are encountered during drilling, grab samples of ground water will be collected for possible analysis. All cuttings, water samples and downhole drilling tools should be monitored or "sniffed" using an organic vapor analyzer/detector (OVA) to detect the presence of volatile organic compounds during drilling.

Regardless of the drilling method to be employed, the general area of each well boring should be scanned using a buried metal/pipe locator (radio detection) to identify possible near-surface obstructions/hazards before drilling begins. All monitor well locations should be cleared with property owners, public and private agencies and public utilities.

Well Completions

Following the completion of drilling activities at each well, a well screen will be positioned at appropriate monitoring interval(s). Screened interval(s) should be deep enough to accommodate seasonal variations in water levels within the well, where possible. For shallow and deep wells, the casing and screen should be 4-inches in diameter.

The monitor wells should be completed using stainless-steel casing (for the wetted zone only) and screen. Stainless-steel screen and casing present the best choice for durability and dependability. The screen slot size will be compatible with formation and sand pack materials as discussed in Section 7.0. All casing/screen connectings should be flush threaded. No thread compounds or glues should be applied to the casing/screen joints.

The screen section and stainless casing in the saturated zone will be joined to Schedule 40 PVC, flush-threaded casing extending through the unsaturated zone to land surface. No glues, solvents, or thread compounds should be employed for joining the casing/screen sections. Prior to installation, casing and screen sections should be thoroughly washed to remove possible contaminants with chemically compatible water using a high-temperature high-pressure sprayer.

After the casing and screen have been installed at each well, a sand pack will be emplaced between the screen and the boring wall. The pack should consist of washed and bagged Monterey sand or equivalent. The sand pack should extend to at least two feet above the top of the screened interval. The grain-size distribution of the sand pack should be compatible with the screen slot-size and the formation materials.

In the case of auger drilling, the sand pack should be poured into place through the hollow stem of the augers as they are pulled. The air-rotary borings, the sand pack material should be tremied into place as the temporary steel casing is withdrawn.

Granulated bentonite should be tremied or poured above the sand pack to a minimum thickness of two feet to provide a dependable seal. The bentonite seal should be wetted in the borehole using potable water to ensure that the seal is matured before cementing operations commence.

Bentonite cement grout should be tremied from above the top of the bentonite seal to land surface. No more than a ten percent gel mixture should be used. The emplacement of the bentonite and grout should occur as the casing/augers are withdrawn to ensure integrity of the completion.

Surface Completions

After the annulus of each well has been grouted to land surface, surface completions for the wells should be constructed. The type of surface

completion (i.e., above- or below-grade) should be compatible with local land use. The surface completion for each well should provide a reasonable amount of protection against potential vandalism or accidental destruction by vehicles. The surface completion should also provide for an adequate casing seal to ensure that entry of surface contaminants does not occur.

WELL DEVELOPMENT

Following the completion of well construction activities, each monitor well should be thoroughly developed. Development operations are necessary to ensure that the sand pack, screen, and well bore are purged of possible drilling residuals and that the well attains a suitable efficiency.

Development operations should be conducted using a submersible pump or bailer. Non-wetted sections of the well bore should be swabbed and rinsed during development operations. Development operations at each well should be considered complete when the discharge becomes clear or when the operations are considered to be complete by the supervising geologist.

Water displaced from each well during development operations should be containerized in a movable steel tank. Prior to disposal, the water should be chemically characterized so that proper disposal methods are employed. Based on the type and level of contamination expected, it is anticipated that development water will be discharged to the McClellan AFB industrial wastewater treatment plant for treatment/disposal.

SITE CLEAN UP AND CUTTINGS CONTROL

During drilling operations, potentially contaminated cuttings and water will be displaced. All cuttings and water produced during drilling should temporarily be stored in 55-gallon steel drums or in bowzers. Cuttings should be monitored using an organic vapor analyzer to determine the presence of possible volatile contaminants. Based on levels of volatile contaminants in the cuttings (as specified by concerned regulatory agencies

and standards), an appropriate method of disposal should be selected. All well sites should be cleaned up following the completion of well installations to ensure that the appearance of the site is returned to a proper condition.

APPENDIX 8

This appendix provides information regarding Task 8,
as discussed in text Section 3.8.

Appendix Contents

There is no Task 8 appendix requirement at this time.
Appendix 8 was listed to maintain numeric order with
task numbers.

APPENDIX 9

This appendix provides information regarding Task 9,
as discussed in text Section 3.9.

Appendix Contents

- 9-A Comparison of Equipment and Costs - Portable vs.
Dedicated Well Sampling Systems

TASK 9 APPENDIX

Comparison of Equipment and Costs--
Portable vs. Dedicated Systems

I. Original Equipment Costs (Capital Costs)

Portable System

Bennett Model 180-125	\$3,231.25
Repair Kit	53.75
Teflon Bailer	120.00
125' Stainless Steel Cable	<u>125.00</u>
Subtotal	3,530.00
G&A @23.3%	<u>822.49</u>
Total Cost	\$4,352.49

Dedicated System

-- Per Well

Well Wizard Model T01200, Pump,	\$ 395.00
Teflon/Stainless Steel	
100' Tubing @ \$2.50/ft.	250.00
Cap Assy	<u>28.00</u>

\$ 673.00

x 50 wells

\$33,650.00

-- Per System

Controller	\$ 1,695.00
------------	-------------

Total Costs \$35,345.00

G&A @23.3% 8,235.38

\$43,580.38

II. Replacement/Repair Costs

Portable System--5 year intervals

Factory Repair of Pump	\$ 148.75
Replacement Tubing--	<u>900.00</u>
125' @ \$7.20/ft	
	\$ 1,048.75

Discounting to present value
using single payment present
worth factor, 10% rate

5 year	0.6209	
10	.3855	
15	.2394	
20	.1486	
25	<u>.0923</u>	
	1.4867 x 1,048.75 =	1,559.18

Dedicated System

Replacement of Pump and Tubing
at 10 year intervals @ \$673 each

Discounting to present value

10 year	0.3855	
20 year	<u>0.1486</u>	
	.5341 x 673.00 =	359.45

x 50 wells =

Total dedicated system repair costs \$17,972.50

III. Total Equipment Costs

	<u>Portable</u>	<u>Dedicated</u>
Capital Costs	\$ 4,352.49	\$43,580.38
Repair Costs	<u>1,559.18</u>	<u>17,972.50</u>
TOTAL	\$ 5,911.67	\$61,552.88

IV. Sampling Labor Costs

	<u>Portable</u>		<u>Dedicated</u>	
	<u>Air Force Labor</u>	<u>Contract Labor</u>	<u>Air Force Labor</u>	<u>Contract Labor</u>
First year, quarterly, 50 wells (200 samples) no discount)	\$ 6,100.00 (15.25/hr x 2 hr x 200)	\$10,800.00 (27.00 x 2 x 200)	\$ 3,050.00 (15.25 x 200)	\$ 5,400.00 (27.00 x 200)
Second year, 50 wells (200 samples), discounted to present value (x 0.9091)	5,545.51 (6100 x 0.9091)	9,818.28 (10,000 x 0.9091)	2,772.76 (3050 x 0.9091)	4,909.14 (5400 x 0.0901)
Third through 30th year (28 years) (50 samples) discounted to present value, using	1,525.00 (15.25 x 2 x 50)	2,700.00 (27.00 x 2 x 50)	762.50 (15.25 x 50)	1,350.00 (27.00 x 50)
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">[</div> <div style="margin-right: 10px;">less</div> <div> present worth factor (n=29) 9,370 present worth factor (n=1) <u>-0.909</u> 8.461 </div> <div style="margin-left: 10px;">]</div> </div>				
	<u>12,903.02</u>	<u>22,844.70</u>	<u>6,451.51</u>	<u>11,422.35</u>
Total Labor Costs	\$24,548.53	\$43,462.98	\$12,274.27	\$21,731.49

RADIAN
CORPORATION

V. Total System Costs

	<u>Portable</u>		<u>Dedicated</u>	
	<u>Air Force</u> <u>Labor</u>	<u>Contract</u> <u>Labor</u>	<u>Air Force</u> <u>Labor</u>	<u>Contract</u> <u>Labor</u>
Equipment	\$ 5,911.67	\$ 5,911.67	\$61,552.88	\$61,522.88
Labor	<u>24,548.53</u>	<u>43,462.98</u>	<u>12,274.27</u>	<u>21,731.49</u>
Total	\$30,460.20	\$49,374.65	\$73,827.15	\$83,284.37
(\$)				

adding one more hour of labor per sample for portable option	<u>12,274.27</u>	<u>21,731.49</u>
	\$42,734.47	\$71,105.66

reducing dedicated
replacement to
once per 5 yrs

0.2394

- 0.5341

- 0.2947 x 673.00 x 50

-9,916.66

-9,916.66

\$63,910.49

\$73,367.71

APPENDIX 10

This appendix provides information regarding Task 10,
as discussed in text Section 3.10.

Appendix Contents

There is no Task 10 Appendix requirement at this time.
Appendix 10 was listed to maintain numeric order with
task numbers.

APPENDIX 11

This appendix provides information regarding Task 11,
as discussed in text Section 3.11.

Appendix Contents

There is no Task 11 Appendix requirement at this time.
Appendix 11 was listed to maintain numeric order with
task numbers.

APPENDIX 12

This appendix provides information regarding Task 12,
as discussed in text Section 3.12.

Appendix Contents

- 12-A General Description of Ground-Water
Methods
- 12-B Discussion of "TRANS" Model
- 12-C Discussion of "USGS-MOC" Model

APPENDIX 12-A

General Description of Ground-Water Modeling Methods

Ground-water processes, such as advection and contaminant transport, are normally highly complex phenomena. In order for an investigator to better understand and/or predict the behavior of ground-water systems, a system model can be constructed. A ground-water model is a simplification of a system such that the overall behavior of the model is representative of the system of study. The level of sophistication or detail employed by the model is dependent on the nature of the system to be modeled, the extent and reliability of available data, and most importantly, the objectives of the modeling effort.

Ground-water modeling methods range in complexity from system conceptualizations to numerical codes which solve or approximate equations describing subsurface processes. Major categories for ground-water models include the following:

- Conceptual;
- Analog;
- Analytical or mathematical;
- Numerical.

Conceptual ground-water models consist of generalizations and conclusions with respect to the nature and behavior of ground-water systems. They are normally based on available data and scientific knowledge/judgment. The conceptual model is useful for general evaluation of hydrogeologic systems. Conceptual models are not usually suited towards predictive analysis of transient systems.

Analog models are generally described as physical systems whose behavior mimics or parallels that of a ground-water system. Physical systems which have been used to model ground-water phenomena include: resistance-capacitance networks, elastic membranes, Hele-Shaw or parallel-plate analogs, conductive liquids/solids, tanks etc. A general discussion of analog models is included in Davis and DeWiest, 1966.

Analog models are usually logistically difficult to implement and inflexible. Furthermore, most analog models are not well suited for modeling the temporal and spacial distribution of solutes in ground water. Because of significant developments in recent years in digital computers, the use of analog models has generally given way to analytical and numerical models.

Analytical or mathematical models consist of simplified mathematical solutions to the governing equations of ground-water. Analytical models can be used to predict processes in ground-water systems where the system and process of study can justifiably be simplified. Analytical models are not well suited the evaluation of systems which vary spacially and/or temporally, or that incorporate multiple, interrelated processes.

Numerical models are computer codes or numerical schemes implemented for the solution or approximation of governing equations describing physical processes in ground water systems. Methods for the solution of governing equations vary between groups of models and include finite-element, finite-difference and stochastic methods. Normally a mesh or grid is established for a numerical model whereby the characteristic features of a ground-water system are represented. Numerical models are generally better suited the representation of complex systems which vary spacially and/or temporally than the modeling methods described earlier.

APPENDIX 12-B

Discussion of "TRANS" Model

TRANS (Prickett et al., 1981) is a recently released mass-transport code for simulating mass-transport in ground-water systems. The finite-difference formulation's used by this model for developing ground-water flow solutions. Solute transport is simulated using the particle-in-cell technique for convection processes. The random-walk method is used for simulating dispersion effects. The code also accounts for retardation caused by chemical reactions between the geologic matrix and the solute. TRANS is capable of simulating one- or two-dimensional non-steady/steady-state flow in heterogenous aquifers. The code can also be used for simulating unconfined, confined, or leaky aquifers.

TRANS has gained wide acceptance among ground-water modeling professionals. Professional short-courses on the application and usage of TRANS are conducted periodically.

Test case and application simulations conducted by the code authors and its users have shown TRANS to be capable of producing reasonably accurate simulations using modern numerical techniques. The source code is written in FORTRAN IV and contains approximately 1700 program lines.

APPENDIX 12-C

Discussion of "USGS-MOC" Model

USGS-MOC (Konikow and Bredehoeft, 1978) is a state-of-the-art mass-transport code which can be applied to a large variety of ground-water modeling problems (Kincaid et al, 1984). It can be implemented for one- or two-dimensional anisotropic, non-homogeneous systems involving transient or steady-state flow. The modeling code assumes that gradients of fluid density, viscosity, and temperature do not affect the velocity distribution. It also assumes that significant temporal variation in the saturated thickness of the ground-water system does not occur.

USGS-MOC uses an alternating-direction implicit procedure for solving the finite-difference approximation of the ground-water flow equation. The code couples the ground-water flow solution to the solute-transport solution. The method of characteristics is used to solve the solute-transport equation. The solute-transport portion of the code utilizes a particle-tracking procedure to represent convective transport. A two-step explicit procedure is used to solve a finite-difference equation describing the effects of hydrodynamic dispersion, fluid sources and sinks, and divergence of velocity. The code assumes that the solute is non-reactive.

USGS-MOC has gained wide acceptance among ground-water modeling professionals for mass-transport modeling applications. The Environmental Protection Agency reportedly uses a version of USGS-MOC for the evaluation of waste sites (Kincaid et al., 1984).

Test cases and application simulations conducted by the code authors and its users have shown USGS-MOC to be capable of producing reasonably accurate mass-transport simulations. The source code is written in FORTRAN IV and contains approximately 2000 lines of code.

APPENDIX 13

This appendix provides information regarding Task 13,
as discussed in text Section 3.13.

Appendix Contents

There is no Task 13 Appendix requirement at this time.
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